The Journal of the
American Medical Association

VOL. XXV. CHICAGO, OCTOBER 5, 1895. No. 14.

ORIGINAL ARTICLES.

GUAIACOL IN THE TREATMENT OF TYPHOID FEVER IN CHILDREN.

Read in the Section on Diseases of Children at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY ADOLPH KŒNIG, M.D.

PITTSBURG, PA.

The comparative rarity of typhoid fever in children is probably entirely due to the fact of infrequent exposure, and not to any lessened degree of susceptibility, as compared with adults. I believe that it can now be accepted as proved, that typhoid fever is essentially a water-borne disease and that drinking water, rather than foul air or direct communication is the medium of infection. We thus have an explanation of the rare occurrence of the disease in very young infants and the increasing ratio of its occurrence in children as they gradually receive more solid food and drink more water.

The pathologic lesions of typhoid fever in children are necessarily identical with those in adults, except that in children who have passed their very earliest period of life, and in whom the constructive metabolism is at its height, the necrotic process, which in the adult often goes on to perforation of the wall of the intestines, is in them resisted more strongly, by reason of their greater reparative power. In very young infants this does not hold good, for in them the constructive forces are not yet established to their fullest power and statistics seem to prove that perforation of the intestine, in this class of patients is as frequent as in adults. The difficulty of making an absolute diagnosis of typhoid fever in sucklings is however, very great and it is not unlikely that typhoid fever in them is often mistaken for the common diarrheal diseases of infants.

Considering the ordinary innocuousness of typhoid fever in children, the question of treatment resolves itself more into a general hygienic and dietetic supervision, than into drug administration. When, however, we consider the etiology and pathologic lesions present in the intestinal canal, during the latter stage of this disease, certain forms of medication seem rational and demanded. According to the modern bacteriologic investigations, typhoid fever is a self-limited disease which reaches its climax at about the tenth or twelfth day, after the development of the first symptoms, and the activity of the bacillus typhosus apparently ends about the middle of the third week. The pathologic lesions, however, remain in the form of ulcers, of greater or less circumference and depth, in the intestinal canal, and the disease then practically resolves itself into a surgical one. The question which then arises is how to prevent the infection of the intestinal lesions with septic germs. The intestinal tract is the fertile habitat of germs always ready to attack its tissues under conditions of reduced vitality, and to prevent the growth and multiplication of such germs, to render the intestinal canal as uninhabitable as possible for them, is to my mind a rational, and in my experience an efficacious, treatment of typhoid fever. To render the intestinal tract as aseptic as possible, it becomes necessary to do more than to administer antiseptics. The first treatment a case of typhoid fever should receive is to clear the intestinal canal as much as possible of all foreign matter, and next, the administration of food should be so regulated as to restrict to the greatest possible extent all fermentative processes during the height of the disease, at which time the digestive functions and the absorption of nutritive material are very seriously interfered with, if not entirely arrested.

The treatment of typhoid fever in children adopted by me can best be described under the following subdivisions:

Initiatory Treatment.—When a child is seen for the first time, though the symptoms present point strongly to typhoid fever, it is impossible to make a positive diagnosis, but it is nevertheless my custom to place them upon treatment appropriate for typhoid fever. The first object to be aimed at is to clear out the bowels, and this is done by the administration of calomel well triturated with sugar, in doses of 1-20 to 1-10 of a grain, according to the age of the child every two or three hours. All solid food is immediately withheld, water however, being given to the extent of the patient's desire.

Regular Treatment.—If after a few days the temperature assumes the typhoid fever curve, the patient is at once placed on the following treatment:

℞ Guaiacolis . . . . . f℥ i
Glycerini . . . . . f℥ i
Alcoholis . . . . . f℥ ii

M. Sig.: One to six drops in whisky and water every two hours, according to the age of the patient.

This treatment is continued throughout the course of the disease, the dose of the guaiacol being increased or decreased according to the severity of the symptoms. The whisky is given in small quantities. In that form I believe it to conserve the tissues of the patient, to stimulate his vital functions and to generally improve his well-being. The dose is allowed to range from one-fourth to one teaspoonful, according to age.

When no desire for food is manifested, or where a decided aversion for it exists, only meat broth and barley-water is given. Milk is allowed either pure or diluted one-half with barley-water, if the condition of the digestive functions seems to warrant it. As soon as the bowels have become thoroughly emptied the calomel is withheld, to be again resumed should the indications demand it. This is the case, as a rule, during the later stage of the disease.

Under this plan of treatment, intestinal antisepsis is furthered as is evidenced by the slight degree of tympanitis; absence of sordes on the teeth and especially by the character of the stools, which are much less frequent and are practically destitute of the very disagreeable odor that characterized the passages of patients before the introduction of treatment directed toward intestinal antisepsis.

High temperature is combated by cold sponging alone. No depressing antipyretics of any kind are used.

While I claim that the course of an attack is materially modified in ordinary cases, I do not claim guaiacol as a specific, for under its use during the last five years, (creasote being used part of the time, in place of guaiacol) I have lost two cases. Both of these died during the latter part of the third week, apparently of acute disorganization of the central nerve centers. The peculiar cause of death in connection with these two fatal cases remains to be explained. In each case a younger brother succumbed to the same disease, under different treatment, and under the care of other practitioners within a short period of time. The question naturally arises, was there not some peculiar absence of resisting power in the members of the families in which these cases occurred? The course of the disease in these fatal cases was not specially severe, but as already stated at some time during the latter part of the third week the nerve centers suddenly became involved and death resulted from asthenia.

No difficulty whatever has been experienced in the administration of the remedy, which is a feature of no little value in remedies for children.

ACUTE LACUNAR DIPHTHERIA OF THE TONSILS.

Read in the Section on Diseases of Children, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7–10, 1895.

BY HENRY KOPLIK, M.D.

NEW YORK.

The writer has been induced to appear before your distinguished body to enlarge upon a theme previously brought to the notice of the profession, because he was convinced that the possible gravity of the apparently simple angina or lacunar tonsillitis was not yet generally accepted.

In a recent discussion upon the antitoxin treatment of diphtheria in the New York Academy of Medicine, one of the prominent speakers referring to bacteriologic diagnoses of diphtheria and especially those diagnoses which reveal the diphtheria not accompanied by membrane or parts of membrane in the throat, said that where the bacteriologic diagnosis of diphtheria, in the absence of clinical evidences, quarantines the house or separates a family from relatives and friends it is a sin against man. A further statement goes on to characterize the treatment of these mild cases in a diphtheria ward as a crime, etc. Another speaker while admitting that he would not give such patients who had no clinical evidences of diphtheria in their throats (membrane or parts of membrane) a clean bill of health, said it was difficult to know what to do with such cases. The terms "clinical diphtheria," "clinical evidences of diphtheria," were freely used and insisted upon as a diagnostic element in all cases where effective isolation is contemplated, at least so one would surmise from a perusal of the printed discussion.

The above is mentioned to show that there is still a wide gap between those who work purely clinical and those who combine the clinical with the findings of scientific research. In other words, we have not advanced a step since the time of the immortal Trousseau, in the diagnosis and prophylaxis of the dread disease, diphtheria, or we have no right to advance. No membrane, no diphtheria! This, to a certain number, is as true to-day as it was in the days of the great pupil of Bretanneau. The writer wishes here to point out the great danger which such a quasi-sentimental definition of diphtheria must needs carry with it. In 1891 the writer of this article, convinced that the gravity of a certain class of apparently simple anginas was not appreciated, undertook to investigate both from a clinical and bacteriologic standpoint all varieties of anginas in which there could scarcely be said to exist at the outset, at least, any clinical evidences *locally* of diphtheria. There was in these cases no form of typical membrane. No such systematic attempt had been undertaken, up to this time, to the writer's knowledge. The profession were told from time to time, that during epidemics of diphtheria, or even in the absence of epidemic influence, what seemed to be a simple lacunar tonsillitis might eventuate as a diphtheria. Trousseau in his lectures upon diphtheria cites forms of lacunar amygdalitis followed by paralyses. These paralyses were similar to those which followed in cases of membranous diphtheria. Trousseau hesitated to call these anginas "diphtheria," even though followed by paralyses. There was no membrane, and he preferred to think rather that paralysis could follow in rare instances a simple tonsillitis. His inability to supply the connecting link between the membranous and the non-membranous cases of diphtheria was the only thing which deterred this clinician from grouping the two classes of cases under one heading. We are certain that had the link been at hand at that time, his views would have been more distinctly radical than they were. He simply said that certain simple anginas might rarely be followed by paralyses.

In 1886 we find this question still a mooted one. Jacobi, of New York, and Fraenkel, of Berlin, both clinical leaders in their respective cities, differed widely in their views upon these cases, Fraenkel insisting that the ground taken by his clinical opponent, that diphtheria may run its course as a lacunar amygdalitis, was too sweeping. At this time also, no proof additional to that submitted by former writers was brought forward to prove the theses of which we are speaking. Every one argued from clinical deduction purely, and clinical deductions seemed to differ when grouped by different observers. After all had been said and done, every one hung to the doctrine of Friedreich, that lacunar amygdalitis was an infectious disease, but would go no further.

Henoch (edition 1893) in his classical hand-book upon diseases of children says in the article upon diphtheria: "I do not recognize the existence of a pharyngeal diphtheria in the form of a simple angina."

Escherich (1890, Henoch's *Festschrift*) while denying the existence of Löffler bacilli in the lacunar tonsillitis of young children, admits their existence in cases of catarrhal anginas of older children, in cases in which at no time has there been membrane or

clinical evidences of diphtheria. Escherich, in this article, is guarded in his conclusions and reserves a decided classification for the opportunity given by a larger material than he had at his disposal.

Gerhardt was at this time also very decided in his view that danger lurked in the atypical diphtheria. He pointed out their capability of causing diphtheria in others.

In my first article (1891, *New York Medical Journal*) upon atypical cases of diphtheria, the first series of cases which were studied bacteriologically were similar to those seen and described clinically by Trousseau, Gerhardt and Escherich, in which we find at the outset no typical membrane. Indeed, during the whole course of the disease, no membrane appeared to the naked eye. The cases were those of a child 4 years of age, having the symptoms and local manifestations of a simple catarrhal angina, but in whose throat large numbers of virulent Löffler bacilli were found. This case was associated in the same family with another severe non-membranous angina, in a sister aged 5 years, to whom I presumed the first had communicated the illness, and in this second case we had the same bacteriologic result as in the first case. During the whole illness, neither of these cases manifested any membrane. Fully a week after the first case had been taken ill, a baby 2½ years old in the same family became afflicted with fatal diphtheria, in which membrane and portions of membrane appeared in the throat, and which also involved the larynx. It will be thus seen that here was an almost faultless group of cases observed daily, in which two had the typical "diphtheria *sine membrana*," followed by a third case in the same family of true clinical diphthetia. It will naturally be asked, Was diphtheria suspected in the catarrhal cases? Working upon diphtheria at the time, scrapings were obtained from these throats, as shown in my paper, and fortunately several times, and tested upon animals; the results justified our early suspicions. The symptoms in these cases in which absolutely no membrane or points of membranous deposit appears in the throat, I must say are equivocal. I have examined the throats of children who gave a set of clinical symptoms almost identical to the first class of cases and, as my work shows, I failed with equal precautions to find diphtheria bacilli. Thus the croupy coughs, the red throats, fever, enlarged glands and, I may say, even prostration upon which the stress was formerly laid, are not characteristic. The only way, it seems to the writer, to positively differentiate these cases is the bacteriologic method.

Another class of cases in which we must always be put upon our guard, are those in which a minute speck of membrane appears on the tonsil or uvula, looking like a drop of fibrinous secretion combined with a typical lacunar tonsillitis. These cases may be truly diphtheritic. Again, a third set of cases, showing pultaceous deposits of a stringy fibrinous character may prove to be non-diphtheritic or *vice versa*. A fourth set of cases are those in which the tonsil is the seat of a necrotic ulcerative process, with no distinct membranous formation. In only one part of the tonsil do we find an excavation, the base of which is covered with specks of exudate. Henoch has described such cases, and many still speak of these cases as ulcerative sore throat. I have proved many of these cases to be distinctly true diphtheria. In some, the children are scarcely ill enough in the eyes of the parents to require treatment. It will be seen that there are forms of angina which are diphtheritic in their etiology, in which at no time are there manifestations of membrane, or such exudate as does appear is atypical.

Feer has confirmed the writer's work in the first set of cases, and it must now be admitted as firmly established that diphtheria "sine membrana" exists, though it introduces an unfortunate complexity into the problem of clinical diphtheria.

The most important class of atypical cases of diphtheria and perhaps the most common are those in which the appearances in the throat resemble in every detail the simple lacunar tonsillitis.

In 1894 I published a second paper, in which a series of consecutive cases, all giving the typical clinical picture of lacunar tonsillitis, were examined with special reference as to their diphtheritic or non-diphtheritic character. This paper adhered closely to this set of cases because in the first paper the material had spread over such a diverse field that it was not possible to judge the actual frequency of any particular set of the cases cited. In this series of lacunar tonsillitis, fully one-third of thirty-nine cases were shown to be true diphtheria. It was possible here, also, to divide the cases into groups as far as the severity and clinical symptoms were concerned.

The first group of cases are exceedingly mild; the patients show but little constitutional disturbance and complained but slightly of throat symptoms. Examination shows general hyperemia of the fauces, enlarged tonsils with open lacunæ. Some of the lacunæ showed an accumulation of yellow secretion at the surface opening. The lymph nodes at the angle of the jaw may or may not be enlarged.

The second group of lacunar diphtherias are those in which the local and constitutional symptoms are more pronounced. The patients show more prostration, the fever is quite high and there are other symptoms as pains in the limbs, furred tongue, etc. The tonsils are much enlarged and there exudes from the lacunæ a soft fibrinous exudate. There is no form of membrane anywhere on the tonsil and the lymph nodes are much enlarged. The plugs of these as also those of the first group contain Löffler bacilli.

The third group of cases are those which show distinctly malignant features from the outset. They do not remain purely lacunar after the first few days, and in this respect would resemble much, cases described by Heubner of membranous diphtheria, which early in their course resemble lacunar tonsillitis; and subsequently show coagulated exudate on the surface of the tonsil. The cases described by the writer belonging to this group, are truly septic in character, and beginning with a picture of lacunar tonsillitis, the infants the first day, even before the membrane is seen, have pallor and prostration which is quite characteristic and may at once put us on our guard. These are the cases which subsequently draw the nasal fossæ into the clinical picture. They are also the fatal cases. They begin as a lacunar tonsillitis and within forty-eight hours membrane and shreds of membrane are voided from behind the immensely swollen tonsils which completely occlude the fauces. It is not the intention of the writer to rehearse here the details of the bacteriologic examination of these cases of lacunar diphtheria of the tonsils, but there are some points which must be of vast and far-reaching importance, and which have been estab-

lished by the writer and since confirmed by Flexner, Booker (Johns Hopkins Bulletin, March, 1895), and others. The Löffler bacilli of diphtheria, in the cases of lacunar diphtheria are found, not so much on the surface of the tonsil, but in the depths of the lacunæ, in the fibrinous plugs, which occlude the lumina of the lacunæ. The bacilli are of equal virulence, whether obtained from the first group of mild cases or the third group of fatal septic lacunar diphtherias. The bacilli retain their virulence for weeks in the depths of the lacunæ, the patient being in apparent full convalescence, or the tonsils having returned to almost the normal size and appearance. In one case virulent bacilli were obtained from a lacunar plug of the tonsil in the third week of convalescence. A lacunar plug in one case, in which virulent bacilli had been isolated early in the disease showed non-virulent bacilli fully three weeks after the outset of the disease. In other words, virulent bacilli were replaced by the non-virulent variety in this particular lacunar amygdallitis.

Enough has been cited above, of the bacteriology of these cases, to show the importance of this class of cases of diphtheria. Too much weight can not be attached to these facts. We must not be turned aside by any fallacious arguments which continue to harp upon the desirability of a membrane in order to entitle a case to the dignity of the term, *clinical diphtheria*. This term, I believe, was first introduced into medicine by Trousseau. It is a landmark in the history of modern medicine, but it is time to protest against its use as a weapon with which to cast contempt on the class of cases concerned in this paper.

If prophylaxis is the ideal of modern hygiene, then the class of cases treated of in this paper, take a rank first in importance. Innocent in appearance, they are the means of disseminating a dread affection. Serious and unremitting isolation is the only method by which we can show our appreciation of their serious nature. Their importance crops out in the operating room constantly. At the last meeting of the American Pediatric Society, the writer of this paper insisted that those cases of tonsillotomy upon enlarged tonsils which were followed by membranous diphtheria, or even croup, were undoubtedly of the nature of the cases described in this paper. It has been shown by the writer that in these large tonsils, virulent diphtheria bacilli exist long into convalescence. As long as they are left to the natural fluids in the lacunæ no harm results to the patient, and we have even reason to believe, as pointed out in my second paper, that they gradually lose their original virulence. Cut this tonsil, however, and you expose to the propagation of the bacilli in the lacunæ the most favored of growing media, a freshly cut surface bathed in lymph, and a membrane results, in some cases spreading to the fauces and larynx. One case of this kind is enough to convince the most skeptical, and yet there are many such, doubtless, who are waiting for the case to occur to them.

Diagnosis.—How can we approach the diagnosis of these cases? The old methods, such as proposed by Henoch, only apply to cases which finally develop membrane or portions of membrane. If we wish, however, to pick out the pure lacunar diphtherias in which membrane never forms, we will find that our safest method is the bacteriologic test. To test the urine to wait for specks of membrane to appear, only delays matters and does not aid us, for we have not only albuminuria in the streptococcus tonsillitis, but also glandular swellings and prostration with low and high curves of temperature. The opponents of bacteriologic diagnosis say that the Löffler bacillus has been found on the normal mucous membrane. Would you call such a case diphtheria and isolate it? The answer to this fallacious argument is plain. The well authenticated cases in which investigators of acknowledged rank (Löffler, Roux) have found virulent bacilli on the normal mucous membrane, are exceedingly rare and exceptional. They are found in throats perhaps exposed to a diphtheria atmosphere. Since the inauguration of the simple crude methods of diagnosing a case of diphtheria by growing a culture and staining a few covers has come more and more into vogue, the bacilli in the normal throats have multiplied in frequency. We would ask that methods showing such evident flaws be not taken too seriously. They are necessary in rapid hygienic work, but must not be brought forward as an argument.

Given an angina in which Löffler bacilli have been demonstrated to exist in large numbers, such a throat is diphtheritic and must be grouped with diphtheria, membranous or otherwise. It should be unmercifully isolated, whether it isolates the patient from friends and family or sends the patient into a contagious ward where severe cases of diphtheria are treated. It has been maintained that the placing of such cases among severer cases is an injustice to the patient. Those who have studied diphtheria since the discovery of Löffler must subscribe to the views brought forward by Escherich. These mild cases of diphtheria must be explained on the ground of immunity. They do not develop membrane and can not develop severe diphtheria, because in these particular individuals there is a natural or acquired immunity which protects them against the severer manifestations of the disease. If you place them, therefore, in a ward in which there are very severe cases of diphtheria, no more injustice is done to the mild case of diphtheria than would be done to a correspondingly mild case of measles placed in a ward with very severe and complicated measles.

On the other hand, these mild cases of diphtheria or lacunar diphtheria or diphtheria "sine membrana," are capable of communicating fatal or severe diphtheria to others. If we grant the above, which is the result of years of work at the bedside and in the laboratory, the principal arguments of the alarmists fall to the ground.

CLINICAL EXPERIENCE WITH ANTITOXIN IN PRIVATE AND HOSPITAL PRACTICE IN THE TREATMENT OF DIPHTHERIA—(ALL FORMS).

Read in the Section on Diseases of Children at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY LOUIS FISCHER, M.D.

Instructor in Diseases of Children at the New York Post-graduate Medical School and Hospital; Physician in Charge of the Messiah Home; Physician to the Children's Department of the German Polyklinik.

NEW YORK.

My first successful case with antitoxin was published in the *New York Medical Record*, Oct. 6, 1894, in which a child 11 years old was attended by Dr. Gerlach. In this case I injected 5 ccm. of Aronson's antitoxin between the shoulder blades. The child was discharged, cured, on the fourth day. This pa-

tient was presented before the New York Post-Graduate Clinical Society at its first meeting in the Hospital Building in October.

Since then I have published a series of papers, embodying various clinical experiences; notably, however, papers that appeared on Nov. 17, 1894, in the *New York Medical Record*. A series of thirty-six cases, which were attended by me, was published in the January number of the *American Journal of Medical Sciences*, wherein I reported a very successful list of cases.

My percentage of deaths was but 5.8 per cent. The antitoxin used was brought over by me from Berlin last summer. Some of my patients were attended in the Municipal Hospital, Philadelphia, through the extreme courtesy of Dr. Welch, the supervising physician in charge, and also through Dr. Edward Davis, the editor of the *American Journal of Medical Sciences*. It is only necessary for me, however, to refer to the paper read by me before the German Medical Society of New York on March 4, 1895, in which I reported a series of 223 cases. These were largely made up of cases attended in hospitals and private practice, but most of them were those seen in consultation. The paper has since then appeared *in extenso* in the *New York Medical Record*, April 6, 1895. The mortality among the 223 cases was 15.11 per cent. This was by me in January, and can be accounted for in various more than twice as much as the first mortality, reported ways: 1, a great many cases were seen in consultation and were cases which were moribund, in other words, hopeless cases, and cases in which antitoxin was used as a last resort; 2, a great many deaths were also in children that had been suffering from mixed infections, cases of scarlet fever and diphtheria, cases of chickenpox and diphtheria, cases of measles and diphtheria. It is here that we can not look for any benefit from the antitoxin, because in some cases, especially in those which were fatal, I found that I was rather called upon to treat cases of septicemia and not cases of toxism, caused only by one infection, the Klebs-Löffler bacillus but rather the combined septic influences of the Klebs-Loffler bacillus and the streptococcus in scarlet fever and other microörganisms with which we are not so familiar.

A very interesting case, and one which I published in detail, was a consultation case with Dr. Roberts, of New York, wherein I refused to inject antitoxin, owing to a scarlet fever complication. In this case we had both diphtheria and scarlet fever, and the child presented a typical appearance of sepsis. The child died about one or two hours after I saw it, and if I had injected this case, we might have believed the antitoxin was again inert. I had, however, injected a prophylactic dose of antitoxin in another child in the same family, in the presence of Dr. Roberts. This child had been exposed to diphtheria, remained immune and was well when I last heard from it through Dr. Roberts, the attending physician.

The constant differences in strength, presence of noxious albuminoidal bodies, and other drawbacks, have given rise to complaints of inefficacy, occurrence of secondary effects and sequelæ, and even deaths. The use of such uncertain preparations tends to create confusion, and has already given rise to personal recriminations in the medical papers. The investigations of Wernicke, Ehrlich, Behring and Aronson on the question of acquired immunity from diphtheria, which were published in the scientific journals, have enabled some manufacturers to produce a serum which is more apt to prejudice the value of the original discovery than to supply the demand for an efficient remedy.

It may be pointed out here, that antitoxin is not made by merely inoculating an animal, drawing off the blood after a certain interval, coagulating and separating the serum. Antitoxin and serum are not synonymous terms. Aronson's antitoxin, with which the best results were obtained, and on which the first clinical reports have been based, is a highly concentrated antitoxin, from which the inert and noxious constituents of the serum are eliminated.

The antitoxin made in Schering's bacteriologic department is, since April 1, controlled by the German government. The official demands require: that the serum is clear, containing at the most only a slight sediment; that the preservative is used in the proper proportions and that the antitoxin possesses the specified degree of immunizing power. This control is carried out in the Berlin Institute for Infectious Diseases; the weighing out, the drawing of samples, and filling in the factory being conducted in the presence of a sworn State officer. Further, the State requirements include the control of the health of the animals; the keeping of a control book, in which entries are made of all the horses, the period of their treatment, the amount and frequency of the blood-drawing, etc.

Physicians will readily see the importance of this measure, giving a satisfactory guaranty that the preparation has been made, tested and put up under the direct supervision of the German government and independent scientific experts.

Another important point in connection with the preparation is its keeping qualities. Dr. Aronson's antitoxin, which is preserved with four tenths of 1 per cent. of trikresol, keeps for an unlimited period of time, and according to the latest investigations, retains its full efficacy for at least one year.

In order to illustrate a few cases which have not been hitherto published and which are some of my most recent publication cases, permit me to offer the following:

Katie K., child, 4 years old, was brought to the office of Dr. R. H. Theyson, on April 13, 1895, to be treated for vomiting. Examination found the temperature 100, pulse 100, very slightly congested. April 14, temperature remained 100, pulse 110, vomiting had ceased; congestion in the throat slightly increased. The Doctor put the child on the ordinary form of antipyretic treatment and also prescribed an astringent for the throat. April 15, the temperature was 103, pulse 120 and slight patches of dirty white membrane were visible on the left tonsil, a small patch on the uvula and the breath was fetid. The child was apparently in good health and lively. On April 16, at 9:30 A. M. the temperature was 103, pulse 140, the child very sleepy and extremely rapid increase of the membrane, which was thick and tough, covering both tonsils, pharynx, uvula, and there was an acrid discharge from both nares. The breath was extremely vile. This case was also seen on the same day by Dr. Brackes. I was called in consultation at 7:30 on the evening of April 16, with Dr. Theyson, and found the throat completely covered with large masses of pseudo membranes. Temperature 103, pulse 104. In order to corroborate the diagnosis, I made a culture on blood serum through the courtesy of the attending physician, which proved Klebs-Löffler bacilli, and I was also asked to inject antitoxin. I injected 5 ccm. of Aronson's antitoxin, using the ordinary antiseptic precautions for the skin and instruments, between the interscapular region. The morning after I injected the antitoxin the temperature was 103, the pulse 140. The child feels brighter and there seems to be no increase of the membrane. Slight amount of albumin in the urine. April 18, pulse 140, temperature 102, vomited some small pieces of membrane at 9:30 in the even-

ing. Owing to a feeble pulse, free stimulants were ordered. April 19, pulse 120, temperature 120. The child has vomited considerable pieces of membrane. Two pieces were the size of 10 cent pieces. The appearance of the membrane in the throat is somewhat thinner. April 20, temperature 100, pulse 110, child very bright. April 21, membrane has disappeared from both tonsils, seems to be very thin on the posterior nares; temperature 100, pulse 110. April 22, temperature 99, pulse 110. April 23, temperature 98.5, pulse 90. Membrane is gradually disappearing. April 24, temperature 101, pulse 100, membrane almost gone; albumin still in the urine. April 25, temperature 98, pulse 100, discharge from the nares stopped. April 26, 27 and 28, temperature 99 and pulse 100. On April 26, membrane disappeared. April 28, patient discharged cured.

Temperature: April 13, 100° F.
" 15, 103° F.
" 17, 103° F. Aronson's antitoxin injected.
" 18, 102° F.
" 19, 100° F.
" 22, 98.6° F.
" 24, 101° F.
" 25, 98.6° F.

Pulse: April 13, 100.
" 15, 140.
" 18, 140. Antitoxin injected.
" 18, 140, morning.
" 18, 125, evening.
" 19, 120.
" 20, 100.
" 23, 90.
" 24, 100.
" 26, 26 and 27, 100.

On April 16, the culture made by me proved Klebs-Löffler bacilli. This is one of my typical cases, as I have seen them and as I have been used to treating them and, although it was agreed that this was a very bad case and that under ordinary circumstances we would give a very fatal prognosis, this child is well and received no other medication, excepting naso-pharyngeal irrigation and local applications of some antiseptic solution.

A second case equally interesting is the following: I was called on April 13, by Dr. A. W. Newfield, to see a case of laryngeal stenosis and membranous diphtheria, involving the complete naso-pharynx, both tonsils and uvula. The child was in such bad condition, that although I was called to inject antitoxin, I told the attending physician that it would very likely require intubation before evening. This was about 3 P. M. That evening, Dr. Emil Mayer was called in consultation to introduce a tube. The following day, by appointment, I met Dr. Newfield, Dr. Emil Mayer and Dr. N. S. Roberts. On talking this case over, we decided that there still was severe laryngeal stenosis, and it was agreed that I should be permitted to examine the case. I was surprised to find no tube. It was plain to me that the child had probably coughed up the tube and swallowed it. I was permitted to intubate the child, which was rapidly done in the presence of the three physicians. Breathing at once was easier and the stenosis relieved. I did not hear from the case until Tuesday, when Dr. A. W. Newfield, the attending physician, called on me to extubate, as the child was entirely well. I begged the doctor to permit the tube to remain *in situ* for at least two days longer; on the following Thursday I removed the tube. The child remained well.

In this case the prognosis was so bad that it was considered a hopeless case and the attending physician believed, as well as I did, that the case was a bad one, but having seen worse cases get well, I decided to give only a cautious prognosis. In this case the urine was examined by Dr. Newfield and found normal; there evidently was no irritation caused by the antitoxin. I injected only 5 ccm. of Aronson's antitoxin between the shoulder blades and ordered naso-pharyngeal antisepsis, consisting of washing the nares and throat with a normal saline solution (warm).

The third case and still more interesting than the above two, was one that was referred to me by the kindness of Prof. H. J. Boldt of this city on April 7. A child, about 2 years old, in extreme dyspnea, was seen by Professor Boldt and he wrote me that it was of the utmost importance to relieve the laryngeal stenosis by intubation. I intubated and the relief was immediate. I allowed the tube to remain three days and extubated, when the membranes reappeared and it was necessary to re-intubate. This has been done in all four times. The depth of the disease and the malignancy of this case can only be imagined, when we consider that we have an extension of the disease from the pharynx to the larynx, and from the larynx to the trachea and as far down as we can not see but only conjecture. Long shreds of membrane are to-day coughed up, exactly as they were two weeks ago. The temperature has been varying between 108 and 101.

Owing to the great risk of feeding and causing pneumonia, in all my cases I have insisted from the first in feeding per rectum, by using an emulsion, consisting of the yolk of an egg and starch water, and beef tea mixed with starch water, and also injected stimulants in the same manner when indicated. I have found that children can get along very well for a week without feeding through the mouth, nor do I give anything through the mouth to quench thirst, but rely solely upon these enemata for both thirst and nourishment.

In all my cases it has been a surprising fact, the amount of good that could be done by combining intubation and antitoxin, but we must know that we are using antitoxin and a reliable preparation of the same only. The condition of the glands, the condition of the pseudo membrane, the temperature curve, the pulse, the heart's action, the urine, the skin and the eruptions following injection of antitoxin are points on which I have already elaborated in the series of papers, which I have quoted in the beginning of this short paper and to which I would beg to refer. I can not therefore take up your valuable time and go into detail on the above subjects without encroaching on the time usually allotted to a paper of this kind. Suffice it to say, that the mortality of my cases of diphtheria, as compared with the mortality of my cases of diphtheria before the antitoxin era is at least 500 per cent. better.

When such eminent men as Professors Heubner, Baginsky, von Wiederhofer of Vienna, von Ranck of Munich, Rauchfuss of St. Petersburg, von Mehring of Halle, Vierordt, von Norden, Seitz of Munich and others, will suddenly change all hitherto known therapeutics, and as at the Thirteenth Congress of Internal Medicine, which was held in Munich in April, 1895, suddenly drop all former medication and get enthusiastic over antitoxin and what it will do in diphtheria, then there must be some real reason for it. When I was at Berlin, Professor Baginsky told me that the mortality of diphtheria had been during the last four or five years about 40 to 42 per cent, and suddenly during the introduction of antitoxin, the mortality went down to about 12 per cent. Through some accident no antitoxin could be had for a short time and again the mortality rose to almost 50 per cent., and then when antitoxin was again to be had, went down to 10 per cent. These facts, as they are the true statistics from one of the renowned hospitals in Berlin, the Emperor and Empress Frederick Children's Hospital, will speak volumes. The same can be said about the sudden enthusiasm of Professor Heubner.

There are a great many contra-indications to the use of antitoxin and these have been pointed out by me in an elaborate paper published in the *Medical Record* on April 6, 1895. Especially must we be careful where there has been a severe form of kidney trouble prior to the attack of diphtheria and especially so where there has been a great amount of irritation in the urine. But do we not always use great

caution when putting a patient under ether and inquire whether he has had kidney trouble formerly? We all recognize there are certain drugs that would irritate the kidneys, that would interfere with the usual heart's action, some like digitalis, that have a very irritable effect upon the stomach; again other drugs in which we must use great caution, owing to their injurious effect within the body. If this be so, why should we not use great caution and judgment in prescribing antitoxin, and inquire if there are not some contra-indications for its use, but with my experience to-day, covering over 260 odd cases, we must believe that some of the brilliant results attained by me have been due and only due to antitoxin. I will only refer to the case I have reported, in consultation with Dr. Newfield and which was intubated in the presence of three colleagues. The other case of Dr. Theyson is equally illustrative. I would not be willing to attend a case of diphtheria to-day, with what I have learned and seen in hospital and private practice, without antitoxin, any more than I would be willing to attend and promise a good result in any form of intermittent fever without quinin, or promise any decent result with other drugs than mercury in syphilis.

Having directed your attention to the good results obtained by the use of antitoxin, permit me, conclusion, to say, that I have had experience with but one patient in New York with domestic serum; this was in consultation with Dr. Landes. A third physician injected the antitoxin. The patient died the following morning. I was so much disheartened by the case that I have never since—nor had I previously used or prescribed—domestic antitoxin. I believe that we are justified in prescribing a specific kind of antitoxin, just as much as we are to-day in the habit of using standard preparations to specify good drugs in other diseases.

187 2nd Avenue.

CLINICAL OBSERVATIONS IN THE TREATMENT OF DIPHTHERIA WITH ANTITOXIN.

Read in the Section on Diseases of Children, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY A. CAMPBELL WHITE, M.D.

NEW YORK.

The medical profession in America has now had an experience of about one year with the antitoxin treatment of diphtheria. It is true that during the first six months the source of our supply of antitoxin was from abroad, and that this supply was necessarily limited, but during the past five or six months the supply has been about equal to the demand, and not many cases of diphtheria, particularly in the larger cities, need have suffered because of an inability to obtain serum of proper quality and strength.

The desire, or ambition, on the part of the medical profession to give this remedy a trial has certainly not been lacking; for I believe I am safe in saying that nothing in the domain of medicine has so attracted the universal attention of the profession and the public the world over, as this treatment of diphtheria with antitoxin.

Our National government, some of the State governments and the leading bacteriologists and clinicians of our country have manifested an active interest in testing the efficacy of this treatment. In doing this, Americans have only been following the example of Germany, France and England, where the treatment has been afforded a considerably longer and much more extensive trial.

It seems, therefore, as if the theory of the antitoxin treatment of diphtheria should by this time either be discarded or denounced as unsound and worthless by those who have been carefully and scientifically testing its merits all over the world, or the theory should be accepted as giving to us a remedy with which to combat one of the most fatal diseases coming under the care of the physician, and pointing the way to the successful treatment of many other dreaded diseases of bacterial origin.

Have we, then, after this universal and extensive use of antitoxin any evidence or testimony to show that it does not overcome the toxemia of diphtheria, or that it is contra-indicated in the treatment of diphtheria? If so, what is the evidence, and what is the source of this evidence?

Have we any evidence or testimony that antitoxin does overcome the toxemia of diphtheria? If so, what is this evidence, and what is its source?

1. *What has the Work in the Laboratory Shown?*—The process of the manufacturing and testing of antitoxin, I consider one of the soundest proofs of its efficacy. If we could find anywhere the testimony of a bacteriologist of experience that antitoxin does not save the life of a guinea pig or other animal, when this animal is injected with several times the fatal dose of the diphtheria toxin, we might then hesitate in our belief in its utility. But we can not find such testimony; and have we any authority for believing that the same phenomena do not occur in man as in the guinea pig, dog, horse and other animals, when the cause of the phenomena is the same in both cases? The results in the laboratory all tend to demonstrate the feasibility of the antitoxin theory.

2. *What has Clinical Study Demonstrated?*—It must have impressed every one forcibly who has followed the literature upon this subject, that nearly all the unfavorable reports have come from those whose experience has been extremely limited, that is, we see an occasional report of a case that has received antitoxin, and later died; or, sometimes a very complete report is made of an individual case, showing that after an injection of antitoxin there is a sudden development of alarming symptoms, quickly followed by death, or the patient may have lived some time after the injection, suffering all the time from symptoms which have never been seen before in the course of an attack of diphtheria. In either case we are to believe that antitoxin is the factor which has caused the fatal termination. Then, again, we read more reports to the effect that antitoxin has no influence whatever on the course of diphtheria, either good or bad.

Before accepting these reports of extremely limited numbers of cases as an evidence against the use of a remedy which, in the experience of so many, has given such great promise of good, we should carefully eliminate the possibility of there having been other factors than antitoxin in determining the unfortunate results of these cases. The entire solution at a low temperature might be injected directly into a blood vessel—the same might be true of a considerable quantity of air, for it is extremely difficult with most of the syringes used, not to have some air in the cylinder at the time of injection. Either of these accidents might cause a sudden and fatal termination.

Then, again, where did the antitoxin come from? Not only can a serum be put on the market containing little or no antitoxin—and it would have been easy to have sold such a serum some time ago and not very difficult now—but it is only with careful prolonged experience and costly labor that an antitoxin solution can be prepared which can be used and relied upon with perfect safety.

The clinical testimony in favor of the use of antitoxin is abundant. The reports, with hardly an exception, from every hospital the world over, where antitoxin has been given extensive trials, have shown most wonderful results, and these reports have included the observation of some of the most conservative and distinguished clinicians of the world. In fact, nearly every report made upon a sufficient number of cases upon which to base a satisfactory conclusion is but another evidence in favor of the use of antitoxin.

It has been my good fortune to see in hospital and private practice something over two hundred cases of diphtheria, varying in severity from its mildest form to its most malignant manifestation, treated with antitoxin of varying strength and obtained from different sources.

The results of the first series of cases treated in this country were published by me in November, 1894.[1] At that time I stated that I believed we had received in antitoxin a specific for diphtheria, in that it would prevent death from the absorption of the toxins of diphtheria, when given at the proper time and in sufficient quantity. I have no reason to day to modify this statement. Further experience has only confirmed the conclusions derived from the treatment of the first twenty cases.

It is not my purpose to present to you a number of tables and statistics showing the value of this remedy; I hope this is not necessary. I shall endeavor, as briefly as possible, to relate to you, without the use of figures, some of the clinical manifestations of diphtheria, with its complications when treated with antitoxin, and a few practical points in the administration of antitoxin.

I shall first consider the effects of antitoxin upon the local conditions caused by diphtheria where the larynx is not involved.

FALSE MEMBRANE.

It is the common experience of all of us to see cases of "bacteriologic diphtheria" showing only a few patches of false membrane, cases which we would have undoubtedly diagnosed as tonsillitis some years ago, before we could rely upon the microscope for assistance. In these cases we could hardly expect to see any difference in the results obtained with antitoxin and those obtained with our former methods of treatment. Still, I think it has also been the experience of many of us to have seen these at first mild or tonsillar cases gradually or suddenly develop into the most malignant form of diphtheria, sometimes terminating fatally. This, I recognize, is not the rule, but it is certainly not so very infrequent. I have never seen such a case of diphtheria when treated with antitoxin take any other course than rapid recovery, and it is in this class of cases that it is so difficult to fully appreciate the value of the treatment. Where the membrane is fully developed, covering to a more or less extent the tonsils, uvula, pharynx, posterior nares and nares, we have certainly occasion for alarm, and it is in such cases we want and seek more particularly for a specific.

It has not been my fortune to see with the use of antitoxin any material shortening of the duration of membrane, where it has become firmly attached and seems to be a part of the mucous membrane underlying. I have seen some rapid discarding of membrane before the use of antitoxin, and I have seen a few cases since, but in the latter case we could hardly claim that antitoxin was the curative agent. In fact, I do not believe that antitoxin shortens the duration of the false membrane at the most more than two days, and I have never seen it "melt away in a few hours' time." We do notice, however, some change in its appearance some twelve to twenty-four hours after an injection of the serum; the edges of the false membrane become sharply defined and it may appear to have become thicker than it was before the injection. This is a good omen and augurs well for the patient's recovery.

The more important effect antitoxin has upon the pseudo membrane of diphtheria is its power to abort or check its further extension, and in this respect we certainly obtain the desired results. This power has been well demonstrated in many cases of diphtheria when we have been obliged to forcibly remove from the nose, plugs of membrane, which completely obstructed these passages and formed a source of septemic infection. Whenever this has been done before the use of antitoxin there has almost immediately been a re-formation of membrane, necessitating a repetition of the operation, and I do not remember having seen but one child (the procedure has proved successful almost invariably in adults) recover after this forcible removal of false membrane from the nasal passages, while, on the other hand, recoveries have been frequent in cases treated in the same manner and under the influence of antitoxin, and in most cases there has been no evidence of the slightest tendency to a recurrence of the membrane.

The influence of antitoxin on these cases I consider one of the best evidences of its efficiency.

EDEMA, OR SWELLING OF MUCOUS MEMBRANE.

The prognosis in all those cases which are ushered in by edema of the uvula and marked swelling of the pillars of the fauces, or where the false membrane first appears and is soon followed by this same condition of edema, is always unfavorable, and it is this form of diphtheria which gives the most pain and general discomfort to the patient. Upon this condition, antitoxin exerts a most decided and satisfactory influence. The patient in about ten hours finds deglutition is not accompanied with so much pain and difficulty as before. It is also this subsidence of the swelling which causes the false membrane to appear thicker and more defined in outline.

GLANDULAR SWELLING, OR DIFFUSE INFILTRATION OF THE NECK.

This glandular enlargement of the neck which appears so rapidly in certain forms of diphtheria, especially those in which there is involvement of the posterior nares, could hardly be expected, having become fully developed, to disappear at once under any treatment, while it is the rule under almost any form of treatment for these enlargements to gradually develop until the membrane disappears or absorption of toxins ceases. They rarely suppurate in diphtheria, in any case, unless it be some time during con-

valescence. Suppuration seems to have occurred just as frequently as it did before the use of antitoxin, but the subsidence of the acute glandular swelling seems to have been accomplished more rapidly with the use of antitoxin than with other remedies.

OTITIS MEDIA.

The frequency of this complication seems to have been somewhat lessened, but this fact can hardly be directly attributed to the virtue of antitoxin. It has been probably due to the fact that the irrigation or local treatment of the posterior nares and pharynx have been much diminished in frequency of application.

SYSTEMIC SYMPTOMS.

I refer by the systemic symptoms to the influence of antitoxin upon the temperature and pulse, post-diphtheritic paralysis, sudden cardiac paralysis, nephritis and the general condition of the patient.

I have found no reason for changing the statement made in my first paper concerning the influence of antitoxin upon the temperature and pulse, which is as follows:

"The temperature of diphtheria is so variable, being sometimes low in the most severe cases and high in others, it is impossible to tell how much it is influenced by any treatment. In some of the cases the rise in temperature after the injection was marked, in others there was no decided change, while in still others there was considerable fall. This fall of temperature we notice in many cases soon after the entrance to the hospital, the temperature on admission probably being the so-called 'ambulance fever.' Streptococci, inflammation, and other complications also give a high temperature, therefore antitoxin could have no influence on these temperatures.

"The effect upon the pulse is of much more importance. In nearly all cases nine hours after injection the pulse was much improved in strength, volume and frequency."

POST-DIPHTHERITIC PARALYSES.

As to the effect upon the post-diphtheritic paralyses, no influence seems to be exerted upon a paralysis already established. Antitoxin, it would seem ought certainly to prevent, when given early in the disease, the later development of a paralysis. This it does not always do, for we have seen quite a number of patients develop in the usual way post-diphtheritic paralysis after having been treated with full doses of antitoxin early in the disease. The same remarks apply to the sudden heart paralysis. It is difficult to determine just how much the occurrence of these paralyses is influenced by the injection, but it is my impression that they are diminished in frequency and in severity, nearly all the cases showing paralysis only of the muscles of the soft palate.

ALBUMINURIA, OR NEPHRITIS.

Several observers have asserted that the appearance of albumin in the urine occurs with much more frequency when antitoxin is employed as a means of treatment. We have used the same methods of urinary examination for albumin since the use of antitoxin as we did before, and have failed to find that the same observation applies to our cases. If there has been any change at all it has been in favor of antitoxin. It is possible that those who have found the appearance of albumin more frequently than formerly, have examined more carefully the urine of antitoxin patients and have even used more delicate tests. If this be the case, the results are unsatisfactory unless compared with equally careful urinary analyses of patients who have not received the treatment.

It will be seen thus far I have described no sudden change in the symptoms of diphtheria, either local or systemic, following the use of antitoxin. I have said the false membrane does not disappear rapidly, the glandular swelling of the neck does not subside immediately, neither does a high temperature always rapidly fall. Nevertheless, there is a marked change seen some twelve hours after the proper dose of antitoxin has been given. *This change is chiefly in the general condition of the patient, and the improvement of some patients in this one respect is remarkable in its extent and suddenness. A bad prognosis given in an individual case can, by the use of antitoxin, be changed to one of almost sure recovery within twelve hours' time.*

It is this one fact which has led me to consider the remarks made recently against the use of antitoxin[2] (in spite of the fact that they come from so distinguished and careful a clinician as Dr. Joseph E. Winters), to be an argument in favor of its utility.

Dr. Winters said: "I have failed to see the slightest evidence that it neutralized the toxemia in a single case. I have never found that it exerted the slightest influence for good in a single clinical manifestation of the disease."

Nearly all the cases seen by Dr. Winters were seen by others as well as myself. Our observations differ in great measure from those of Dr. Winters, who bases his conclusions upon the fact that nearly all the cases were mild and would have recovered without any treatment.

Oh the other hand, we consider that more severe cases of diphtheria have entered the hospital during the past three or four months than ever before. This difference of opinion is explained by the fact that Dr. Winters saw the patients (this applies to a great majority of the cases), some twelve to twenty-four hours after the injection of antitoxin had been made, and some twelve to twenty-four hours after an unfavorable prognosis had been given by those who admitted the patient.

For this reason I believe this difference in opinion only emphasizes the point just made, that *with the proper dose of antitoxin a bad prognosis in an individual case can be changed to one of almost sure recovery within twelve hours' time.*

LARYNGEAL CASES.

I can only mention these cases briefly. The treatment of laryngeal diphtheria with antitoxin can not be intelligently discussed in so short a time; an entire paper could be devoted to this topic with satisfaction.

It is in the laryngeal cases that we see the most marked reduction in the mortality, and this applies to the operative cases as well, either when tracheotomized or intubated.

If we depend upon antitoxin only, in our treatment of this class of cases, we must resort to operative interference earlier than when we use other methods of relief for the stenosis, such as calomel sublimation, poultices applied to the neck and other recognized forms of treatment. The reason for this is evident, the antitoxin not exerting much influence until at least nine hours after injection, while the stenosis may demand immediate relief.

BAD RESULTS.

Numerous skin lesions are seen quite frequently, generally not causing much disturbance to the patient. They assume the different forms of urticaria, erythema, measles and scarlatina, and may appear at any time during the course of treatment.

Some of the cases which were said to have an antitoxin rash resembling scarlatina developed symptoms of some septic infection, followed by pain and swelling of the joints. There is hardly any doubt in my mind that these were true cases of scarlatina; the joint symptoms following the eruption, and in some cases the nephritis, are only additional points in confirmation of this theory. I have never seen any other of the evil effects ascribed to the use of antitoxin by some observers.

In conclusion, I shall endeavor briefly to mention a few of the more important points to be observed in the administration of antitoxin serum.

TIME OF ADMINISTRATION.

Great stress has always been laid upon the necessity of the early administration of this remedy. Too much can not be said upon this subject, for, of course, no harm can possibly be done and benefit should always result from its early administration. Nevertheless, I have reason to believe from experience in consultation, the magnifying of this point by nearly all writers has been the means of depriving not a few patients of the benefit of this treatment. We must constantly hold in mind the fact that diphtheria is one of the most variable diseases with which we come in contact, and that the symptoms on the second or third day of the disease in one case of diphtheria may be even more fully developed than in another patient who has been afflicted for double that time, granting that both are severe forms of the disease. The absorption of the toxins in one case has been extremely rapid, while in the other the absorption is slower, just as certain, and often just as fatal. This difference depends upon the virulence of the bacilli, the susceptibility of the patient to the toxin, and the power to overcome the toxemia when once established.

We see therefore, that we can expect better results in some cases from early treatment with antitoxin than in others: that in many cases the treatment begun late in the disease may save life, and that the classification of cases treated with antitoxin according to the days upon which the treatment was begun is not by any means a sure indication of what the antitoxin has accomplished.

The history of a patient seen some months ago in consultation illustrates well a point in this connection. I saw the child after he had been ill seven days with tonsillar diphtheria. On the evening before the child was seen by me, the symptoms, local and systemic, which up to this time had been very mild, suddenly changed for the worse. The false membrane began to spread and by morning involved the tonsils, uvula, pharynx, posterior nares and larynx, as evidenced by extreme stenosis. The glands in the neck were also considerably enlarged. I advised postponement of operative interference as long as possible and prescribed other measures for the relief of the stenosis. The physician in attendance thought the antitoxin could hardly be of use as the patient had already been ill seven days. I believed the antitoxin would be as efficacious in this case as if it were the second day of the disease instead of the eighth, and the antitoxin was injected. The result in the case proved the latter to be true, and we felt safe the following day in assuring the mother of the recovery of her child. The recovery of the child was as rapid and complete as in any case I have ever seen.

We must take into consideration in each individual case the rapidity of the onset of symptoms, the general condition and age of the patient, in determining the dose of antitoxin to be administered and the prognosis to be given, and not depend too much upon the duration of the disease as a guide.

SITE OF INJECTION AND PRECAUTIONS TO BE TAKEN.

We must select that place which will give the least disturbance to the patient during and after the injection and which is most convenient for the operator when dealing with a refractory child. If we select the extremities, we are more liable to put the contents of the syringe into some blood vessel, as we have reason to believe has been done before with fatal results. The inter-scapular region or the chest are better places, but I believe, taking all points into consideration, we shall find either of the buttocks the most convenient and satisfactory situation, both to the operator and the patient. They should be thoroughly cleaned with green soap and alcohol, the injection should be made deep and the buttocks should not be rubbed or massaged after injection.

THE SYRINGE.

We can not exercise too great care in the selection of a syringe to be used for this purpose. It should be large enough to contain a single dose of the serum; it should be as simple as possible; it should contain no valves that can not be easily cleaned, and it should be such a syringe that the operator can inject a large quantity of fluid into a struggling child without the danger of the needle being pulled out before the injection is finished or even broken off and left in the child, and further, such a syringe as will preclude the possibility of air being injected.

The Roux syringe up to a short time ago was the only syringe which combined to any considerable extent these requisite qualities. It is elaborate, useful, expensive and can not be obtained without difficulty, as only a limited number have been imported.

A syringe for antitoxin use, recently invented by Dr. Cyrus Edson, is remarkable for its simplicity and utility. After using this syringe on several cases I have found it quite necessary to make several changes in it, which I believe now make this syringe the most satisfactory in every respect of all the syringes used for this purpose. The only defects in the Edson syringe were the straight and smooth cylinder, which allows the finger to slip during use, the direct connection of the needle to the cylinder, which does not allow of any play to the syringe during the injection, the necessity of a separate receptacle for the needle, rendering the sterilization of another tube necessary.

The syringe, as modified, has the following features, which will recommend it to your use:

1. The cylinder is entirely of glass and the piston of metal.

2. The needles are contained in the shank of the piston.

3. There is a rubber tube, which can be changed at each injection if desired, connecting the needle with the cylinder, or the syringe can be used without this tube.

4. There is not a screw joint in the instrument.

5. The washers are simply thin pieces of rubber,

which can be cut from an ordinary rubber bandage, and kept constantly in an antiseptic solution never to be used but once.

6. The entire syringe consists of three distinct parts, viz., the glass cylinder, the piston (containing the needles), and the rubber tube. All these are contained in metal cases together with a pair of thumb forceps and a bottle containing the washers, and the entire outfit, case and all, can be put in a sterilizer or boiling water and quickly and satisfactorily rendered sterile immediately before using.

The accompanying figure will illustrate quite well the simplicity of this syringe.

Fig. 5.

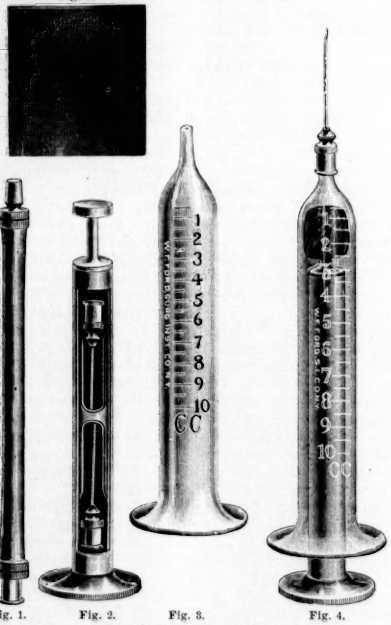

Fig. 1. Fig. 2. Fig. 3. Fig. 4.

WHITE'S ANTITOXIN SYRINGE.

1. Rubber tube. 2. Piston containing needles. 3. Glass cylinder. 4. Syringe ready for use. 5. Rubber valve.

IN CONCLUSION.

The laboratory, with its animal experiments, the steps taken in the production of the antitoxin, the great mass of clinical evidence combined with the character of the source from which this evidence comes, leads me to believe that the antitoxin theory of the treatment of diphtheria when developed to its fullest possibilities, will prove an unfailing cure in diphtheria toxemia, and my own experience has been such as to convince me that using a reliable serum and with the exercise of ordinary care in administration, there is absolutely no danger to life through its influence upon any of the organs of the body.

Hotel Endicott, West 81st Street and Manhattan Square.

[1] Read before the Pediatric Section of the New York Academy of Medicine, Nov. 7, 1894, and published in Medical Record, Nov. 17, 1894.
[2] Medical Record, Nov. 17, 1874.
[3] Remarks before New York Academy of Medicine, stated meeting, April 4, 1895, and Medical Record, April 20, 1895.

SOMETHING CONCERNING THE DIAGNOSIS AND TREATMENT OF FALSE CROUP.

Read in the Section on Diseases of Children at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY STARLING LOVING, M.D.
FIRST VICE-PRESIDENT, AMERICAN MEDICAL ASSOCIATION 1894.
COLUMBUS, OHIO.

False, or spasmodic croup, or mild acute laryngitis with spasm of the laryngeal muscles, is one of the every-day respiratory diseases of early childhood. It is seen at all times of the year, but is most prevalent in the changeable weather of autumn and in the early part of that season traditionally but improperly called spring.

Every general practitioner sees and treats it, and, when diagnosis is correct, prognosis is uniformly favorable, and treatment successful. Without correct diagnosis, prognosis is wavering, treatment is lame and the most uncomfortable person connected with the case, not even excepting the patient, is the medical attendant.

Discrimination is to be made between false croup and diphtheritic croup, between false and true or membranous croup, and sometimes between false croup and acute laryngitis without spasm, and between false croup and laryngismus stridulus. As true croup, laryngitis without spasm, and laryngismus stridulus are of infrequent occurrence. The decision commonly lies between false croup and diphtheria.

It would seem that differentiation should be easy, but the diseases in their most prominent symptoms resemble each other so closely as to make it often embarrassing. Still, while there are many points of resemblance there are dissimilarities, which, if rightly interpreted, render valuable assistance.

False croup is sporadic, and its course and termination preclude the idea of infectiousness. It is so common that the practitioner is frequently called to two or three cases in a single day, yet it is never communicated, nor does it ever assume epidemic proportions.

True croup is a rare disease, so rare that though one may see a case or two in the course of a month, he may not see another for a year or two. It is sporadic, and is never communicated.

Apparently sporadic cases of diphtheria are not uncommon, and at times there is difficulty in tracing the infection, but when sufficient pains are taken the history of the case is easily completed. Ordinarily, there is no trouble, and when after the usual period of incubation, croupy symptoms develop, there need be little hesitation in regard to the diagnosis.

The onset of all the diseases to which the name croup, has been given is sudden; neither has a well-defined prodromic stage nor symptoms, yet we find events in the early history of almost every case of each which serve to guide us in discrimination.

False croup is frequently preceded a few hours or for a day or two by coryza and hyperemia of the fauces, which may be accompanied by feverishness or slight fever. The child may be listless and drowsy, but is usually more animated and excitable than when well, and is not inclined to sleep at the usual hour. In some cases the catarrhal symptoms are more diffused, the larynx and trachea are involved, and there is cough but without stridor or spasm. Ordinarily, with the development of the croupy cough there is an increase of temperature, and

a sudden suspension of the discharge from the nose; the nasal and pharyngeal mucous membrane becoming dry, and decidedly more hyperemic. There is never any decided chill.

True croup is also generally preceded by catarrhal symptoms but of more decided type, involving the nasal, faucial and bronchial mucous membrane; the patient, for a few hours before the development of symptoms of constriction in the larynx may complain of soreness in the throat and of difficulty in swallowing. There may be also slight swelling and tenderness of the glands at the angles of the jaws, and of those in front of the larynx. Such swelling is never observed during the progress of false croup, nor is there ever tenderness on pressure over the larynx, as found in true croup and in diphtheria. Likewise, diphtheria is sometimes preceded by catarrhal symptoms, but such are coincident, or accidental and have no prodromic significance. The appearance of coryza in the course of a case of diphtheria is usu ally hours or days after the attack, and may be taken as evidence, not that the disease is beginning, but that the lesion, already developed, is extending. Such symptom therefore is to be regarded as prognostic rather than diagnostic.

Fever marks the onset of each of the three diseases. In either, the degree is sometimes slight, and some cases of false croup and of diphtheria are afebrile. But in the larger number of cases of each, the fever is sufficiently pronounced, the temperature ranging between 101 and 104 degrees F. In a case of false croup which recently came under my care, the temperature was not at any time above 100 degrees F., while in another seen two days later, the temperature, during the fore part of the night of the attack, was 104.5 degrees F. In false croup, fever, when present, commonly develops a few hours (late in the afternoon or early in the evening) before the manifestation of the characteristic cough and dyspnea. It is always most severe during the first twelve hours of the attack. In many cases, with or without the influence of medicines, it diminishes within twenty-four hours after, and does not again reach so high a degree. There is generally an exacerbation during the afternoon and evening of the second day, but the temperature is not so high nor the accompanying symptoms so severe. By the third or fourth day, often by the early part of the third, unless the inflammation has extended to the bronchial mucous membrane, the temperature has fallen to the normal, and the pulse, which has been increased in proportion to the fever and the nervous disturbance, has been reduced to the standard of health. The fever is frequently accompanied by nervous excitement, and the child is frightened by the obstruction to its breathing, but there is no delirium nor convulsion as seen occasionally in the onset of diphtheria. There is no fright in diphtheria.

The onset of membranous croup is pretty uniformly ushered in with rigors, or a decided chill, followed by fever ranging between 102 and 104 degrees F. The pulse is full and bounding, the skin is hot and dry, the child is restless and uncomfortable, but does not show fright, complain of headache, or of pain elsewhere, nor is there delirium, or convulsion. More commonly the fever develops gradually with the catarrhal symptoms, and reaches its intensity when the false membrane has formed in the larynx. It is the continued fever of inflammation. There are no pronounced remissions, but toward the last, if the case be prolonged, it assumes the asthenic type.

The fever of diphtheria is frequently ushered in by a decided chill, and with the chill, or afterward with the rise of temperature, the patient sometimes becomes delirious or has a convulsion. The elevation of temperature may be slight, but it usually reaches 103 or 104 degrees F. There is no marked remission until the severity of the attack has subsided, or until the patient becomes exhausted and collapse is near. It is asthenic from the onset. The pulse, which is not much accelerated, may be full and strong at first, but is generally compressible and rather weak. Toward the last, in cases which are protracted, or which incline toward a fatal termination it becomes more frequent, feeble and thready. I think what has been stated concerning the fever and the pulse, is particularly true of cases in which the disease has primarily attacked the larynx.

False croup is sometimes preceded or accompanied by symptoms indicative of disordered digestion, as shown by flatulency, nausea, and constipation or diarrhea, with or without "hives", or urticaria, (and there may be some connection between the stomachal, cutaneous and respiratory symptoms) but, in general, beyond slight constipation, there is no disturbance of the digestive apparatus until after medication. The appetite returns as soon as the fever subsides and the use of nauseant medicines is suspended. Neither is there notable disturbance of digestion in membranous croup nor in diphtheria; but in the latter, the loss of appetite and repugnance to medicines is frequently a striking symptom. It is often almost impossible to persuade the patient to take nourishment or medicine even in the smallest quantities, not because the stomach is disturbed, but because of the influence of the malady upon the nervous system. The patient can not eat. While cathartics cause no more than legitimate effect in false and in membranous croup, their influence is apt in diphtheria, even in the onset, to be followed by noticeable and unpleasant increase of general debility.

In false croup, the dyspnea and cough are always notably mitigated by the influences of emetics, but in true croup and in diphtheria, except in those rare cases in which the false membrane is loosened and forced out, though the dyspnea may be somewhat relieved for a brief period, the obstruction is not removed, and the remedy not only does no good, but actual harm by adding to the prostration. The practitioner does not hesitate, if the symptoms require, to repeat mild emetics in the treatment of false croup, but on seeing the prolonged languor and weakness which invariably follow emesis in diphtheria, he delays. The same is true of nauseants and of sedatives.

As already stated, the approach of false croup is generally manifested by catarrhal symptoms and fever. The attack may come without either. With or without, after three or four hours sleep, the child awakens suddenly with a feeling of impending suffocation, accompanied by the peculiar raspy crowing sound and barking cough, which give name to the disease. The head is thrown back, the shoulders are raised, the mouth is open, the nostrils expanded, the face is pale or flushed, the pupils are dilated, and there is agitation and terror. Inspiration is prolonged, noisy and obstructed, while expiration is short but free. The larynx is more prominent, and

moves more freely than during normal respiration, and than during true croup and diphtheria. The pulse is frequent, though usually of good volume, and the skin often moist, especially of the face and neck. The voice is hoarse, and for the time, reduced to a whisper, and if the patient be induced to speak, he utters his words in a short impatient way, after the manner of asthmatics. If the throat is examined (a difficult operation) the pharynx and epiglottis are found hyperemic and may be swollen, but there is no false membrane. Such symptoms develop often in a few minutes, and under proper treatment may disappear in an equally brief period. The child will readily swallow anything in the shape of a remedy which may be offered.

When diphtheria invades the larynx, the attack is not so abrupt. In the larger number of cases, the larynx becomes involved through extension of the lesion from the fauces, in some cases, after all acute symptoms in the throat have subsided, and hopes of convalescence are entertained. It is rare to see the pharynx and larynx invaded simultaneously. When the larynx becomes involved by extension, there is no difficulty in regard to diagnosis. Hoarseness, stridulous breathing (inspiratory and expiratory) and presently the croupy cough, are sounds which indicate too plainly what has happened and what is likely to happen. But when the larynx is involved primarily, it is not always easy to decide the nature of the case. As already stated, usually the attack is more gradual than that of false croup, the patient has fever and is hoarse some hours or for a day or two before the development of the characteristic cough and there is more the appearance of illness and prostration. In false croup the stridor and dyspnea are more or less paroxysmal, and always inspiratory in character, are constantly diminished by the influence of emetics and nauseants, and usually disappear by the second or third day, while in diphtheria both steadily increase with the swelling and the augmentation of the exudate. While there is hoarseness, and even temporary aphonia in false croup, the voice is never entirely lost—the constantly increasing hoarseness, and persistent whisper of diphtheria is never observed. While in false croup, hoarseness and aphonia subside after a paroxysm, and after the action of an emetic, both, in spite of the action of remedies, steadily increase in diphtheria until the case terminates in recovery or in death; death, without the offices of the surgeon, being the usual result.

Cyanosis and orthopnea are not uniform symptoms of false croup. Both, when present come with the early paroxysms, and rapidly diminish under the influence of treatment. Cyanosis is constant and orthopnea uncommon in diphtheria. The cyanotic condition develops slowly and is most apparent toward the close, when the bluish pallor of the face and lips, together with the child's struggles for air, form a picture not easily forgotten.

Death from false croup is so rare, that (unless the result of injudicious treatment) it should excite suspicion of error in diagnosis, and the suspicion is usually confirmed when an autopsy is made.

If two or more cases of false croup occur in the same house, they follow at irregular intervals, and no connection can be traced; if more than one of diphtheria, the second develops at the expiration of the usual period of incubation.

False croup more frequently attacks children, who though neurotic, are in ordinary health, while diphtheria prefers such as are debilitated from other causes. A child who has had one attack of false croup seems more liable to future attacks, while there is a question whether a second attack of diphtheria is ever seen in the same person.

The nursling enjoys a degree of immunity from both (indeed from all forms of croup) but is more liable to diphtheria. False croup usually attacks children of from one and a half to five or six years, and the predisposition constantly diminishes, so that the disease is rare after the eighth or tenth year. Diphtheria is most apt to occur in the same class, but attacks susceptible persons of whatever age. Bronchitis is the only sequel to false croup, while diphtheria has many, such as paralyses, albuminuria and swollen glands.

When there is remaining doubt, the microscope should be called into requisition, and the absence or presence of the Klebs-Löffler bacillus ascertained.

It is unfortunate that culture is ever necessary, and that the bacillus can not always be found in the specimens as taken from the throat. In this connection, it should not be forgotten that cases of diphtheria without false membrane occasionally occur, and that such, though usually mild, when the larynx is the point of attack, may prove as dangerous as when the exudate is abundant. In such cases clear diagnosis is obtainable by the microscope only.

Many members of the profession, mostly of the larger cities, especially of New York, doubt or deny the existence of a non-diphtheritic exudative inflammation of the larynx (true croup) and include all cases in which false membrane is found, under the name of laryngeal diphtheria; while others maintain that there is such a disease distinguished not by a slough such as characterizes diphtheria, but by the formation upon the surface of the mucous membrane of a true exudate of fibrinous material, in which the Klebs-Löffler bacillus is not found, and which when the force of the attacks is spent, separates and leaves the membrane intact, and not denuded and ulcerated as in diphtheria after the separation of the slough. Most of those holding the affirmative opinion are general practitioners, ("clinicians who love finalities") of the lesser towns and of the country, but among them are some men of distinction, as Dr. Fagge and Dr. Donkin, and they are supported by some accomplished pathologists, as Dr. Welch, of Johns Hopkins University.[1] It is well known that acute follicular tonsillitis, a common acute disease of the tonsils, and distinctively exudative, is caused by the presence and influences of pyogenic bacteria; no one, so far as my knowledge extends, ever claimed that fibrinous bronchitis, a rare but well-known disease, is diphtheritic in character, and, while pneumonia is exudative, (croupous) there is not much in common between the diplococcus of Fraenkel, or the pneumococcus of Friedlander, and the Klebs-Löffler bacillus; why, therefore, may there not be exudative inflammation of the larynx, as of other parts, of other than diphtheritic origin? We may distinguish false from membranous or true croup, by the greater severity of the catarrhal symptoms, by the occurrence of chills, by the continual fever, by expiratory as well as inspiratory stridor and dyspnea, by increas-

[1] Baginsky, Dr. Welch, and Dr. Sternberg, all agree that while the false membrane may be morphologically the same, it is not always diphtheritic; that is, it may be caused by other agencies than the Klebs-Löffler bacillus.

ing and non-intermittent hoarseness, by the change in the voice which is soon reduced to a whisper, by the cough, which at first resembles that of false croup, but soon loses the tubular quality and becomes hissing.

The larynx is more fixed and more or less tender on pressure from without. The epiglottis is red and swollen, so likewise are the aryteno-epiglottidean folds, and the rim of the glottis; and now and then the false membrane may be seen. Cyanosis is slowly but surely developed, is noticeable first as in diphtheria in the ends of the fingers, at the tip of the nose, and lips, and finally becomes general. The stenosis of the larynx increases, orthopnea develops, prostration becomes marked and without relief there is a steady advance to a fatal termination.

Acute idiopathic laryngitis, non-exudative in type, and of more severe form than has been described, is not of common occurrence. As a secondary disease it is occasionally seen in connection with measles, and with scarlatina, or with other diseases. Sometimes it is of traumatic origin. It may be differentiated from false croup by the greater intensity and persistency of the fever, by expiratory and inspiratory stridor and dyspnea, and by the character of the cough, which, though hoarse and barking, is less resonant and tubular than that of false croup.

Laryngismus stridulus, or child-crowing, is also uncommon, at least in Ohio. It is a purely neurotic, afebrile malady, always affecting anemic delicate children, with or without rickets. It is distinguished by the character of its attacks, which come without warning, is wholly spasmodic, continues for a few moments only, and recurs at intervals, short or long, through a series of months or years. The diagnosis having been established, the treatment of false croup is simple and satisfactory. It consists of measures adapted to the control of fever, inflammation, and nervous excitement, including spasm of the larynx. The old idea that emetics and nauseants are needful for the cleansing of the stomach, and the loosening and expulsion of false membrane, was of course not well founded, but such remedies fill better than any others the objects of treatment—sedation, relaxation and increase of secretion. Therefore a mild emetic, or at least a nauseant should be administered as the first measure, and no medicine is more popular, nor perhaps better adapted than ipecacuanha in the form of powder or other convenient preparation. I prefer the powder. After emesis, a laxative dose of calomel and soda should be given, and followed by small and repeated doses of ipecac and soda, triturated with sugar of milk until relaxation is complete, and the secretions from the mucous membranes have been excited to free flow.

It has appeared to me that for the purpose of maintaining relaxation, ipecac in powder, with soda, is better than any other remedy or combination. This is perfectly safe, and with proper regulation of the doses the needed effect can be uniformly maintained for many hours in succession without great distress to the patient. Occasionally the ipecac, especially when calomel has been administered, causes sharp purgation which is of no disadvantage in cases in which there is high fever, but, in general, when the bowels become loose the remedy should be suspended lest undue prostration result. Some prefer turpeth mineral as an emetic, others apomorphia, squills, the tartrate of antimony, alum, the gillenia or American ipecac, sanguinaria, etc. There can be no objection to turpeth mineral nor to alum, nor possibly to any of the remedies mentioned, but I never feel quite comfortable, after using apomorphia, until I know the time for injurious influence has passed; and I never prescribe the tartrate of antimony which, even in small doses, causes disproportionate prostration in children. When the fever is high, with or without the emetic, modern doses of aconite with the sodium bicarbonate, forms a combination which fills all the indications admirably. Though so powerful, it is easy to regulate the administration of aconite so that unpleasant effects may be avoided.

Antipyrin and antifebrin, are both effective remedies, causing quick, nervous and arterial sedation, decided increase of the secretions of the mucous surface and of the skin, and they are reasonably safe, provided their administration is properly guarded. They, however, sometimes produce much more effect than is desired, and therefore may not be used without misgiving.

Pilocarpin has greater influence on mucous and cutaneous secretions than any other medicine, and has a sedative effect on the heart. I think its influence on the heart (of small doses at least) is overestimated, and that, with prudence, it may be used in the treatment of croup without risk and with decided benefit. The doses should be small, even proportionally, and should be frequently repeated until the peculiar effects of the remedy upon the skin and mucous membranes become manifest. In a few cases in which I have prescribed it, the dyspnea and spasmodic cough diminished as soon as the skin became decidedly moist. In one case in which the temperature was 104 degrees F., and there was great nervous excitement, a tepid pack, and a few doses of pilocarpin soon brought down the fever and reduced the other symptoms. One hesitates, generally, before administering opiates to young children especially in the treatment of diseases which obstruct the respiration, and hesitation is wise, but in spasmodic croup the difficulty of breathing is due almost altogether to spasm of the laryngeal muscles, and not to swelling, so that an opiate, preferably the tincture of Dover's powder, with ipecac added, can not be considered an objectionable remedy. The opiate should be administered immediately after the operation of the emetic. The dose should be full and should not be repeated too quickly. Often a single full dose will put an end to a violent paroxysm within an hour. Of the use of red iodin of mercury and of belladonna, I know comparatively little, but they are esteemed good and appropriate.

Local remedies are of little service, but every one prescribes them to please anxious friends.

The room should be well ventilated, and the temperature kept at 70 or 75 degrees F.

Surgical interference is never necessary in the treatment of false croup.

DISCUSSION ON PAPERS OF DRS. FISCHER, WHITE, KOPLIK AND LOVING.

DR. GRIFFITH, of Philadelphia—This meeting brings up a reminiscence of the meeting of the American Therapeutic Society two years ago. I was convinced that the New York men had seen a vast deal more of diphtheria than we Philadelphians had ever seen. I am impressed with that fact again this morning. When it comes to the treatment of diphtheria in a large number of cases, the Philadelphia members, to use a slang expression, are not in it. I see Dr. Welsh, of Philadelphia, here, who is the only one among us

who sees a large number. We all see isolated cases, but not enough to treat the matter thoroughly by experience gained from an accumulation of facts. I have had the privilege of seeing some of the cases in the Municipal Hospital treated when Dr. Fischer came to Philadelphia, and have watched the treatment by the authorities.

As to the value of the antitoxin treatment in diphtheria, it seems to me without question a proper treatment, and that is uttered by one who is decidedly skeptical. The treatment by antitoxin I at first received with scruples, and yet so many cases have been diminished in severity by this antitoxin treatment, that if I had diphtheria it seems to me I should like to have the antitoxin theory tried in my case.

I was interested particularly in Dr. Koplik's paper on lacunar diphtheria of the tonsils. I have seen cases where the watchers in a family have been affected with diphtheria, and we are really forced to the conclusion that those suffering with diphtheria may communicate it to others. Therefore, it has been my custom, for some time, with every case of lacunar diphtheria of the tonsils to tell the family, as well as I can do so without alarming them, that the child ought to be isolated until we can find out exactly the gravity of the malady. I am sure that I have seen cases of diphtheria begin in that way and many cases follow.

Dr. Welsh, of Philadelphia—I have had limited experience with the use of antitoxin in diphtheria within the last few months. I hardly know just the number of cases which have come under my observation, but something over a hundred. I have been exceedingly anxious that antitoxin should do all that is claimed for it. I feel as we all feel, the great need of a remedy for this disease, and I was very glad to learn of the great benefits that had been derived from its use in Berlin and in Italy, and in Paris, New York and other places. I have been looking for these benefits, watching closely for them, observing every case closely, and looking for evidence to convince me of the great value that has been claimed for antitoxin. I hesitate to express any opinion in regard to antitoxin to-day, but I will say I am disappointed in its use. It does not come up to my expectations, and I do not see the results that have been claimed for it. In a few cases, I have seen very good results follow its use, but whether it was because of its use strictly, I am not prepared to say, for we all know it is very hard to distinguish in these cases. I have seen equally well marked improvement from other treatment. I do not know that I am prepared to give any statistics. I have not worked out these cases carefully, but I intend doing so hereafter. In the first hundred cases I injected in the Municipal Hospital, I can not say that the death rate had been reduced to any great extent. My resident physician informed me that our rate had been 25 per cent. while the loss at the same time from the whole number of cases was only 2 or 3 per cent. more. I might add that I endeavored to select the most suitable cases for injection. It is true that a great many of the cases do not come to us early enough. I think that ought to be stated in justice to the claims made for antitoxin. We have, however, received quite a large number of cases said to have been ill only twenty-four hours. Others were said to have been ill forty-eight hours, and so on. We have tried to limit our injections, as far as possible, to cases that had not existed longer than say four days. It is true some, however, have been injected where the disease had been of some duration. As I tell you in a general way, the death rate among our cases has been 25 per cent. as compared with about 27 or 28 per cent. perhaps, during the same period as to the whole number of cases. That of course would include cases injected with antitoxin, as well as the others. We have excluded all severe cases, all malignant cases, in which there seemed to be no hope. Having excluded all such in the antitoxic treatment, we therefore naturally expected that the general death rate would be higher as they were thrown out. I will say, on the other hand, that we did not inject mild cases where we looked for recovery under any treatment. They too have been excluded.

Another subject has been touched on in this discussion, and that is the diagnosis in lacunar diphtheria as I understand it. It very frequently happens that we receive in a hospital, a subject, showing this form of diphtheria well marked, while another child of the same family will have well marked diphtheria, in which there is variance, and sometimes from the same family will be admitted a case of membranous croup in which there is no exudate whatever to be seen in the process. I have no reason to believe that diphtheria assumes all these different forms, and the specific microbe is present in each. Tonsillitis cases sometimes so thought, are really cases of diphtheria. I am convinced that frequently, a specific microbe is found in these cases of follicular tonsillitis.

The Chairman—Whose serum do you use in Philadelphia?

Dr. Welsh—We have used mostly Behring's No. 2. We have used, also, some of Aronson's, and some of Mulford's, and two or three bottles perhaps of the serum prepared in New York. Mostly, however, it has been Behring's.

Dr. Thomas, of Michigan—My practice is limited entirely to private practice, and to twenty-five cases. The community in which I live has a population of 5,000, but it is one which diphtheria has visited frequently. Our mortality has been simply frightful, averaging 75 per cent. during the last twelve years that I have lived there, although I think the treatment has been the true treatment. Four months ago the epidemic started again. For the first of these twenty-five cases I was unable to obtain any reliable antitoxin, although I made efforts to obtain it in New York, Philadelphia and Chicago. Of the first eight cases, four died. Seventeen I treated with antitoxin, and, without going into any details, I will state that in each of these seventeen cases the bacilli was verified, and I have had a recovery of 100 per cent. (Applause.)

Now, gentlemen, this may be merely a coincidence, but those were severe cases. It is where antitoxin is used before the secondary septic symptoms manifest themselves that it is efficacious. I do not think you can save a case of diphtheria after it has passed into the secondary symptoms, but with my experience, I am certainly an enthusiastic advocate of antitoxin.

Dr. Larrabee—We have certainly had an opportunity to profit by the discussion of this subject so far that it is hardly necessary to add very much to it. The enthusiasm which surrounds new treatment of disease is well known and accepted. Having been a participant in that enthusiasm in 1890, with tuberculin, and having been dampened in my enthusiasm for such treatment, I have been naturally going slow with new treatments since then. Whenever we report every case getting well in diseases of a fatal nature, and no deaths, the mark of suspicion is upon us. We ought to be watched for a while at least. (Laughter.)

There are cases of diphtheria and diphtheria, and there are cases of typhoid fever and typhoid fever, and there are cases of measles and measles, and you may call it all measles, but there is quite a difference in the nature of each case. It might happen to a man that he had this success which has been related, and I do not doubt it. Such success as 100 per cent. of recovery, and not a Dutchman's 100 per cent. either, is very remarkable. It means that every case gets well. Such an experience as that would be a very grand one, if we could carry it out. The point seems to be that we have mild cases and severe cases. We may have very considerable local trouble with very slight constitutional symptoms. It is in these cases that we make a test of the treatment. The point seems to be that in deciding in regard to this great new treatment we might derive a little profit even from a retrospect. It has been about a hundred years since the greatest inroad was made upon disease by Jenner by vaccination. But it must be remembered that Jenner shut the gate of death while the throng was going through. Jenner's discovery was a perfect discovery of a fact which had been observed only by a limited number, but it needed no argument. The shutting of the door against the tide of smallpox was a fact. It swept the earth with great destruction in that time. So in that we saw a perfect discovery needing no modification or building up. Now, the point in these new discoveries, I believe is well taken. I believe we are on the right track. I believe antitoxin is a move in the same direction as Jenner's discovery, and I regret that the profession has been a hundred years in moving upon lines that were developed by the original discoverer. We do not expect after a man has been suffering seven or eight days with smallpox to vaccinate him, and have him recover thereby. Jenner did not do it, and nobody else can do it, but by immunizing with serum you have the best test of its efficacy. Too much stress is laid on the arrest of the disease after it has taken possession of the system and become septic. You might just as well vaccinate a man when he has already contracted the smallpox.

My use of antitoxin is too limited to bring it into the discussion. I can revert to but sixteen cases. These cases all recovered. In two cases where I did not expect recovery under the old treatment, I was very greatly pleased with the results. The other cases, I believe, would have gotten well under the old treatment probably. I can not tell. That is a point we can never discuss. Dr. White discussed a case here that comes to mind. I never diagnose a case of croup or tonsillitis with fever that I do not have a string

tied to it, so that I may pull it back after two or three days if I diagnosed it as a simple disease. The fact brought out in Dr. White's paper comes home to all of us; where we at first think there is no danger, and that we have only a case of tonsillitis to deal with, and where the most pronounced symptoms of diphtheria develop afterward. We have a case of sore throat out our way that we call drain sore throat. It is easily contracted, and if you want to make it to order you can do so at any time, if you will dig a little pit at the back door of your house, and throw the dishwater into it for a few days, and let the July sun get at it. You can then have this drain sore throat. I have named the bacillus of this the seweronicus.

THE CHAIRMAN—What does it look like?

DR. LARRABEE—It has four tails, and is exceedingly lively, and hops about on several legs (Laughter). This is a thing that is communicable, and that will reproduce its kind. It is as contagious a form of sore throat as any other disease. You have the affection of the tonsils. You will have fever and a new set of symptoms coming on the second or third day.

On the subject of false croup, I want to say with all kindness, that I hope our nomenclature of diseases will be changed some time or other. The false things ought to disappear, and the true things come to the surface. False croup is no croup at all. I think that the nomenclature would be benefited by a thorough purgation. We want to get rid of a nomenclature that can only lead to error.

DR. SMITH, of St. Augustine—Are membranous croup and diphtheria to be allowed to stand as distinct diseases, or when are they to be considered otherwise? I would be interested to hear Dr. Koplik on the subject.

DR. INGALS, of Chicago—I regret very much I did not hear the papers read. I feel as the Doctor feels who has just spoken, that we are probably on the right path with antitoxin, but there are a good many points that should be considered by men who are making these experiments, that have not been explained satisfactorily to my mind, at least, up to the present time. The matter of diagnosis is very important indeed, and in the reported cases which have come under my notice in the journals at large, only in a comparatively limited number were the diagnoses accurately made. As I came to this meeting, a gentleman told me of some one in this community who had been treating a great many cases of so-called diphtheria with antitoxin. This gentleman did not belong to the regular profession, and his method was when called into a house where there was a sore throat, to pronounce it diphtheria, and immediately administer antitoxin. The result of his experience was that those who had been immunized had had diphtherir, while there was no proof that any one in the community had had diphtheria, and I think a great many of our reports in the journals have to do with this sort of cases.

I think the effort is in the right direction, but I do not think we have very much proof at the present time. My own observation has been limited; so far as I have been able to observe, benefit has followed the use of these remedies, but the experiment as a rule has not, to my mind, been satisfactory, and I find upon consulting the literature upon the subject that among the profession who ought to know most of this—the gentlemen in France and Germany, differ upon it. There is a good deal of division of opinion; about one-fourth of them are very sure that antitoxin is a great remedy, and about three-fourths are not at all sure of it.

I find in my reading only one experiment that has much weight with me. In this experiment, the antitoxin was given for a few weeks and there was great improvement in the rate of mortality; when the supply of antitoxin diminished the mortality increased, and when the antitoxin was gotten again, the mortality was again reduced. The mere statement that beginning at a certain time, the death rate was 50 per cent., and beginning at another time the death rate was 25 per cent., is no proof whatever. We all know that the death rate in diphtheria during a bad epidemic will run up to 60 per cent. and sometimes higher. We know that in the beginning of the epidemic the death rate will run up to 60 per cent. and a week or two later drop to 35 per cent., and then be still further reduced until all recover.

On this account the experiments have not been of much value. It seems to me there ought to be experiments made that would be of some value. If cases as nearly alike as can be selected were treated alternately by the different methods, we might then make comparisons of value. These doctors who have been so successful might have gotten hold of cases at the end of an epidemic, and those cases might have recovered even if the physician had not been there at all. I hope that we are in the line of developing something that will cure diphtheria. Antitoxin is young, and like tuberculin, its estimate in our opinion may have to be revised. I think, however, that a physician who has an opportunity to use antitoxin and does not use it is culpable. We should give the patient the benefit of every chance where there is no risk.

DR. YOUNG, of Newark—I regard antitoxin as a baby with long clothes, from which I hope for much. I believe it will grow to be large. The test for diphtheria, I believe, is the microscope, and that should be carried out as a test. I regard diphtheria a disease as we find it and not as a germ. I regard diphtheria as a systemic affection, and not local. I make no applications to the throat whatever, and the results seem to be good. I find that less than one in ten die when that treatment is adopted. I believe diphtheria is the development of a germ within the system, although you may call it, if you please, the ptomaine of diphtheria. The result of my treatment has been good; it has been entirely systemic, relying largely upon the use of pilocarpin and good nourishment.

DR. WEAVER, of Pennsylvania—The remarks of the gentleman from Newark, as far as diphtheria is concerned, are excellent. In my country diphtheria prevails very largely. I often see in one day three or four cases of ordinary acute tonsillits, and have come to look upon those cases as dangerous. In the country districts we are compelled to protect ourselves better than you gentlemen in the city hospitals. We have to protect ourselves on all sides. I look upon those cases of tonsillitis from the standpoint of diphtheria; if the case does not turn out to be diphtheria we are safe, and if it does turn out to be diphtheria, we are still safe. The results are excellent when the treatment is begun early. Within two months, two cases have come to my notice where I have used antitoxin. One was the case of a little girl 7 years old. She had come from Philadelphia, where she had been exposed two weeks before. The case seemed mild in its incipiency, and I treated it as one of diphtheria, and prescribed accordingly. I visited the patient next day. In the intervening twenty-four hours the disease had spread considerably, and it looked to me as if the child was going to die. A consulting physician was called, and he told the parents, in my presence, that the child would die before the next morning. I agreed with him. I thought that this was a case for antitoxin if there ever was one. We sent for some of Gittings' antitoxin. I administered a large dose, and repeated the dose in twenty-four hours. The effect was immediate in bringing the temperature down from 102 to subnormal. The gentleman who was called in said to me: "Doctor, I think the case is going to die, but if the patient gets well I will credit it to antitoxin." He did not believe in antitoxin then. The child had thrown its head back, and it was impossible to give it nourishment naturally. This condition existed for twenty-four hours, but the child continued slowly to improve, and finally got well. I am as sure as I can be of anything that this case was saved by the use of antitoxin.

There was another child in the same household suffering from diphtheria, but not so ill as the one I have just spoken of. That child died through the carelessness of the nurse in letting her fall out of bed. I am sure that there is power in antitoxin. Of course I can not tell from one case whether it is absolutely good or bad, but from my limited experience I consider it a good thing, and I am going to use it wherever I find a case that I think demands it.

DR. INGALLS—I believe the gentleman who spoke this morning said that he hoped this experimentation would continue. I must differ with him in regard to this being treated as an experiment. When I was in Europe in 1891, Professor Behring, in a lecture on bacteria, said that he had discovered a substance known as antitoxin that would cure diphtheria. This was after the period of tuberculin fame, and the reason the physicians in Berlin would not take hold of antitoxin was owing to the great failure of tuberculin, but as these physicians in Berlin would not take hold of the substance I did not bring any to New York.

It is not a year and a half ago since Professor Werniger came to the Chicago Exposition and brought me some antitoxin. He asked me to use it, but I was afraid to do so. I had samples sent to me from various chemic houses. They called it antitoxin, but I was afraid to use it. I had not then heard of Aronson's. I went to Europe last year, and found there two schools of treatment by antitoxin. There are two factions. One is the school of Behring, who manufactures antitoxin, and who claims priority, and the second is the Aronson faction, which is a rival school, also making

antitoxin, but in a different way from the process followed by Behring. At a recent meeting of the alumni of the Charity Hospital, we laid down the rule that Aronson's antitoxin should be used in a dose of 5 cubic centimeters injected into the interscapular region. When I hear Dr. Welsh speaking of No. 2 antitoxin, I tell him that since I have had more experience I use only No. 3 Behring's antitoxin for healing purposes, and No. 1 for immunity. When I was in the hospital in Philadelphia I asked Dr. Welsh to use No. 3 because it was more concentrated.

One of the gentlemen remarked here that he selects the malignant cases in this treatment, and does not treat the mild cases with antitoxin. I treat every case of diphtheria that comes along. The moment I have a patient that shows an inflamed membrane or an inflammation of the larynx, I know then that I am treating diphtheria, and am justified in using antitoxin. My first report showed a percentage of 5.8 mortality. At that time I had some very mild cases, and the first and second days of the disease I had excellent results. My second report raised the percentage of mortality from 5.8 to 15 per cent., almost three times as great, and it was due to the fact that I injected every case I saw, whether moribund or not. If I thought I could save a person from drowning by throwing a rope, why not do it?

Antitoxin and serum are not synonymous terms. Toxin is a condition of the blood. I would ask Dr. Welsh to be kind enough to use the antitoxin that I send him, and use it without skepticism. When I read a paper on March 4 before the German Medical Society, Professor Jacobi said that he was happy to see such honest statistics, and rather complimented me on such a high rate of mortality. If I included all the cases I had, the mortality would have been very much less.

Dr. Larrabee mentioned a point in the case of immunity. I had a case where I refused to inject antitoxin, where it was a bad case of septicemia, and the child must die anyhow. Of course the antitoxin would have done no good. The Doctor asked me whether we could save the other child with an immunity dose of serum. I told him I thought so, and we injected the child and it remained immune. In such cases we always inject one-tenth of the healing dose of serum.

Dr. White—I think we put too much stress on the importance and value of statistics. I think every man who has had experience in the treatment of diphtheria with or without antitoxin, can make an intelligent comparison of the value of the two treatments without consulting any figures whatever. I have seen something approaching two thousand successive cases of diphtheria in the last two or three years, many of them treated without antitoxin, and quite a large number treated with antitoxin, and have absolutely no hesitancy in stating that where there was antitoxin treatment of diphtheria there was improvement in almost every phase of the disease, particularly in the incubation cases; also in those cases where there is some evidence of approaching sepsis. I know without consulting any statistics that antitoxin has been a benefit in those cases.

It was mentioned during the discussion here that in the literature upon antitoxin about one-fourth, perhaps, of the statistics were in favor of the use of antitoxin, and about three-fourths undecided. Certainly my reading has not led me to believe the same way. I think we have a large amount of evidence in the statistics from Paris and elsewhere that is valuable. There is a large number of cases in the hospitals of Brooklyn, and it has been always noticed that the mortality has diminished upon the introduction of antitoxin, and that mortality increases after antitoxin is removed from the treatment. The answer to that by those who are opposed to antitoxin, is that the epidemic is mild when the antitoxin is in use, and again becomes severe when the antitoxin is taken away. But if that is going to continue, it is all the evidence I want for my belief in the use of antitoxin. If the disease is going to become mild when antitoxin is used, then I say there can be no objection to the use of antitoxin.

Dr. Fischer asked me to speak upon the use of internal medication. He brought out the point that he did not expect to remove the stenosis by the use of antitoxin. I think we do remove it by the use of antitoxin, but it takes ten or twelve hours to get the evidence of relief. I believe also that we should resort to other methods of relief—medical methods. I see no reason why we should not use the same remedies as before. Antitoxin is slow in bringing about its results. I have always advised the use of irrigation of the throat with a pure plain water solution of soft water. I have not obtained any good results from antisepsis.

I also want to express my thanks for the remarks of Dr. Koplik and Dr. Larrabee on the subject of having the names changed with respect to these false diseases, such as false croup and false diphtheria. I think we ought to treat all cases where the bacilli are present as diphtheria. It can certainly do no harm.

Dr. Welsh—I want to ask Dr. Fischer if I understood him to say that in the selected cases where he used antitoxin, the death rate has been 15 per cent., whereas if he took all the cases in which he used it, the death rate would be as high as 40 per cent.

Dr. Fischer—I said that in my first series of cases the mortality was 5.8 per cent. and in my second series of cases, numbering 223, the mortality was 15.11 per cent. and the higher rate of mortality I attribute to the fact that I was called in consultation in many cases that were hopeless, and they begged me for the sake of the family to inject antitoxin, although I considered them fatal cases before I injected the antitoxin. I find in looking over my record of diphtheria cases, that the mortality was about 40 per cent. or over 40 per cent. averaging cases of so-called diphtheria—that is croup and diphtheria—in which antitoxin never had been used. Since the antitoxin treatment has been used, the highest mortality rate in 223 cases was 15.11 per cent.

The Chairman—Does this 15.11 per cent. embrace all your cases?

Dr. Fischer—All that I have treated.

Dr. Koplik—We do not know yet of any set of clinical symptoms which will distinguish the lacunar diphtheria from ordinary tonsillitis, and for that reason where the conveniences are at hand, we should always make a pathologic test of the sore throat. Where the conveniences are not at hand, I think the best way in all cases of sore throat is to resort to isolation.

Dr. Loving—I will say to Dr. White and the other gentlemen that so far as my limited experience in the matter goes, my observation corroborates exactly the statements of the papers, namely: that the antitoxin is a curative remedy. Koch's tuberculin was a humbug. I used it in forty-five cases of tuberculosis, and every single patient was made worse by it. One of the gentlemen here asked Dr. Koplik to state the difference between diphtheria and membranous croup. I am not much of a microscopist, but whenever I can, I call in a microscopist. These gentlemen practice in hospitals in large cities. My practice is largely among the country population, where we are not quite so subject to infectious diseases as people living in the city. I find once in a while a case of membranous sore throat, where it is impossible to trace any infection. The case begins as a sporadic disease and ends as a sporadic disease. In the few cases where I have called the microscope into use, we have found the bacteria, the ordinary corpuscles, and that is all. I agree with the other gentlemen here that there should be a correction of medical nomenclature. If I had the power, I should abolish all these forms of false disease, and call them by their proper names.

HYPNOTISM, WITH SPECIAL REFERENCE TO HYPNOTIC SUGGESTION AS AN AID TO THE ANESTHESIA OF CHLOROFORM AND ETHER.

BY CHARLES GILBERT DAVIS, M.D.

CHICAGO, ILL.

Time is the great sieve in which is sifted the accumulated thoughts of men. In it the *débris* is removed and only pure sparkling truth remains. It is strange, but nevertheless true, that every great scientific advance in every department of human life is met by the most determined, and I might say, brutal opposition. And yet, as the years flow on, there is ever but one result for all these conflicts, for truth is and ever will be triumphant. Gradually the ignorant, stupid and cowardly attack ceases, the smoke of battle passes away, the clouds are lifted, the din of contending voices is hushed and, lo! some fair, new form is ushered upon the scene, a living, breathing reality. A new star is added to the galaxy of the scientific heavens.

What can exceed the bitterness of the controversy

that for many years has been carried on over the subject of hypnotism, or hypnotic suggestion? It is not my intention, in this article, to review the arguments, pro and con. The salient points are constantly brought before the minds of the intelligent members of the profession, through the medical journals of the day. Neither do I wish to enter, at the present time, upon an elaborate exposé of my views of hypnotism, as to what it is, how it acts, or its application to the cure of disease. All of this will be reserved for another article, which I hope to produce in the course of time. Suffice it to say, that for many years I have carried on my experiments with an idea of determining its merits, and now I am able to say that I thoroughly believe the nineteenth century has evolved no therapeutic agent or remedial measure, all things considered, more potent or more capable of beneficent results than hypnosis.

In my address on this subject before the Psychical Science Congress of the World's Congress Auxiliary, in 1893, I said: "Surgery and hypnotic suggestion will largely constitute the healing art of the future. It may not be in our day, it may be centuries hence, but it will come." I am not at all convinced that this was extravagant language.

But without wishing to compass the entire scope of the subject relating to hypnosis in its application to disease, I wish now to call attention to its efficiency as an anesthetic, and most particularly as an aid to the anesthesia of chloroform and ether.

Ever since I became a student of medicine I have recoiled from what I call the barbarous method of forced anesthesia. I remember some of my first experiences in witnessing surgery twenty years ago in a Cincinnati hospital. Here, the patient was brought in before the class and told to breathe the chloroform, and if he did not do it willingly he was compelled to do so by being held on either side by two stout porters, while the assistant placed a handkerchief over his face, held it there and poured on the chloroform. Convulsed with terror, screaming, struggling and pleading, his whole nervous system in a furor of fright he was finally *overcome*. My observations at the time, and I have never had reason to change them, were that this method itself was almost as much of a shock as an ordinary operation. Only a few days after I began my studies there, under just such circumstances as those I have described, I witnessed a death from chloroform. Suddenly, in the midst of all this contest between the patient and assistants, she ceased to struggle, became quiet and the porters released their hold. She was dead. The post-mortem, as usual, said, "fatty degeneration." The scene impressed me, and I am sure has been a life lesson to my profit. Since then I have administered anesthetics a great deal, and had it administered under my directions by assistants thousands of times. I have never had a death. I do not boast of this; I am only glad. But I have always advised gentleness —the calm, quiet, soothing method. A few years ago the old custom was to fortify the patient previous to the operation with a glass of brandy. I believe a few soothing, assuring words spoken into the ear of most patients at the time will, as a rule, do more good than all the drugs of the Pharmacopœia.

Ever since my boyhood I have studied with interest the subject of hypnotism under its various names, phases and aspects. It has had to me a peculiar fascination. Soon after beginning my medical studies and noting the anesthesia of many hypnotic subjects, the idea naturally presented itself of applying hypnosis to produce anesthesia. Frequently I was successful, but not sufficiently often to indicate that I could rely upon this method in all cases. I have performed a number of minor surgical operations, in which I used hypnotic suggestion with entire success, to produce anesthesia.

For several years the idea has seemed to me feasible of combining in all cases, hypnotic suggestion with the chemic anesthetic. I have been led to this from observing a number of cases during the last few years where such a combination was entirely satisfactory.

In 1888 I was operating on a case of fistula-in-ano. The subject was a man about 32 years of age, very nervous, pale and weak. He got upon the operating table with fear and trembling, begged of me not to give him the chloroform, and was inclined to abandon the operation. I went to his head, closed his eyes, passed my hand quietly over his brow and then made suggestions as to what I wanted him to do, and commanded him to go to sleep. In three minutes he was quiet. Dr. J. B. S. King stood ready with the anesthetic and I motioned him to proceed, while I turned to arrange my instruments. Dr. King immediately ejaculated, "why, he is already asleep!" He had only that instant placed the inhaler to his face. Sure enough, he was sleeping soundly. I proceeded with the operation, which occupied, perhaps, ten minutes. He suffered no pain, did not resist, and was easily aroused after I had finished.

Again about six months later, I had occasion to give an anesthetic to remove a number of wire stitches from the uterus of a patient on whom I had performed trachelorrhaphy. The lady was in a very weak, nervous and exhausted state. She dreaded the anesthetic from recollections of its previous unpleasant effects. I immediately resorted to suggestion till I thought she was quieted and then asked my friend, Dr. M. S. Leech, who was present, to proceed with the chloroform. But as he placed the inhaler to her face he exclaimed: "The conjunctiva is already insensible!" No more than a single whiff of the chemic anesthetic was given. She did not resist during the removal of the stitches, was easily aroused, expressing herself as having felt no pain. Soon numerous other cases followed, in some of which a few whiffs only of the chemic anesthetic were necessary, and others required a continuance of from five or ten minutes.

In July, 1894, I delivered before the Chicago Baptist Hospital Training School for Nurses, a lecture on anesthesia, and presented before the class at that time two young men whom I knew from previous experiments to be slightly susceptible to suggestion. The first, Y. M., a young man of slender build was placed on the operating table and told he was to be put to sleep. The proper suggestions were made, the dry cone was placed over his face, and he was told to breathe deeply. He soon slept soundly and the conjunctiva was insensible. No chemic agent was employed. The second, V. P., of strong vigorous constitution, mounted the table with an incredulous smile. I produced a bottle of water from my pocket, saying I would give him a newly-discovered and more powerful anesthetic. With strong suggestions he soon yielded and slept. The conjunctiva was insensible, and he showed every evidence of thorough anesthesia.

Recently, I have made careful note of a number of cases, both with and without suggestion. The following, taken consecutively from recent clinical work, are sufficient for illustration:

CASES WITH SUGGESTION AND ETHER.

	Time.		Time.
Mrs. N. . . .	12 minutes	Miss M. M. .	12 minutes
Mrs. C. . . .	8 minutes	Mrs. G. L. L. .	8 minutes
Mrs. J. . . .	15 minutes	Mrs. J. B. B. .	7 minutes
Miss S. . . .	7 minutes	Mr. J. G. . . .	13 minutes
Mrs. H. M. L. .	9 minutes	Mrs. G. D. B . .	9 minutes

Average time from beginning of ether to complete anesthesia, ten minutes.

CASES WHERE ETHER WAS EMPLOYED WITHOUT SUGGESTION.

	Time.		Time.
Mrs. W. B. . .	24 minutes	Miss D. C. . .	18 minutes
Mrs. G. H. . .	20 minutes	Mrs. G. H. B .	18 minutes
Mrs E.	16 minutes	Mrs. W. A. D .	17 minutes
Mrs. F. D. . .	21 minutes	Miss S. B . . .	18 minutes
Mrs. T. K. . .	18 minutes	Mrs. W. C. B .	20 minutes

Average time from beginning of ether to complete anesthesia, nineteen minutes.

There is no doubt but that any one of these patients in either of the lists might have been anesthetized more quickly than they were. But in no instance was there any effort at haste, and in each individual case all due precautions were used to insure safety. I am sure that the patients are often overcome, asphyxiated, as it were, by shutting off the air and crowding the anesthetic in three, four, five and six minutes, but in all the above cases the correct gradual method was employed. And so far as possible, exactly the same method was used in each individual case.

It will be seen from these two tables that the time necessary for complete anesthesia, is reduced nearly one-half by the use of hypnotic suggestion. I have no doubt that with more care a much greater reduction might be obtained.

The beneficial results from using hypnotic suggestion as an aid to anesthesia are obvious:

1. It calms the nervous system, and fortifies the patient to withstand the surgical operation.
2. It lessens the danger of shock.
3. It lessens the time, and consequently the amount of anesthetic.
4. The patient awakens as if from a natural sleep.
5. I believe recovery in these cases is more rapid and satisfactory.

There is a wide difference between individuals as to their susceptibility to suggestion. On some it has but little effect; on others it enables us to reduce the chemic anesthetic more than half, and occasionally we meet cases where it is within itself quite sufficient.

It can never, when properly used, cause harm. Then why not always employ it? I can not conceive of a case where it can not be applied. The more intelligent the patient, the more readily we may speak to the nerve centers and have them obey. Still to the insane, to the idiotic, and the unconscious babe, we may make suggestions to the sleep centers by gentle motions and soothing tones.

I believe that hypnotic suggestion will, in many ways, but most particularly as an aid to the anesthesia of chemic agents, prove a blessing to mankind.

Blank applications for membership in the ASSOCIATION at the JOURNAL office. Write for them; sent free.

THE MEANING AND IMPORT OF CASTS IN THE URINE WITHOUT ALBUMIN, AND THE INADEQUACY OF THE ORDINARY CHEMIC TESTS.

BY LUDWIG BREMER, M.D.
ST. LOUIS, MO.

The microscopic examination of the urine, though resorted to more frequently now by the general practitioner than ten or twenty years ago, is still too little practiced and is underestimated as to its value by the vast majority of physicians. In suspected cases of renal diseases or complications, the chemic test, frequently a very crude one, is relied upon exclusively, and in case of absence of albumin the verdict is rendered: there is nothing the matter with the kidneys. How erroneous such a course is on the part of the physician, what dangers it involves to the patient, what damage it may cause to the reputation of the medical attendant, and how important it is to the medical man to emancipate himself from a time-hallowed and pernicious delusion, viz., the all-importance of the chemic urinary tests, I shall try to demonstrate and emphasize in the following remarks.

The diagnosis, albuminuria, is unscientific. Albuminuria, as is well known is not a disease, but a symptom of a number of diseases. Not only a variety of diseases but a variety of altered conditions still within physiologic limits, may give rise to the presence of albumin in the urine. Thus a full meal or great bodily fatigue may cause it in some persons. A certain percentage of cases of albuminuria during pregnancy also belong in this category.

Now, in my experience and opinion, the presence or absence of albumin in the urine is not nearly of the diagnostic and prognostic importance, as the morphologic evidences of kidney disease, *i.e.*, the presence or absence of casts. I venture the broad statement that a person who constantly or periodically passes urine containing casts, even without albumin, or perhaps albumin in chemically demonstrable quantities, is not in good health. Such a person in my opinion has a damaged constitution; his kidneys are, to say the least, vulnerable. The irritative process which gives rise to the formation of casts may not amount to an actual state of inflammation; above all there may not be the recognized somatic signs of fully developed kidney disease, and yet the subjective symptoms may be very pronounced. They often are unaccountable, because sufficient importance is not attached to the presence of casts in the urine of such persons. Many obscure and inexplainable nervous disorders of an apparently functional character are, however, rendered intelligible when viewed in the light of uremic or uro-toxemic conditions. A vulnerable kidney is naturally more easily disturbed in its function, more prone to perverted action than the normal one. If it be true (and the trend of modern views and observations point in this direction) that there is an internal secretion in the kidneys, it can be easily conceived how, beside the deficient activity of the kidneys, causing a lack of elimination of the body's waste products, there may be a vitiated metabolic process in the kidneys, processes whose products are of a toxic character and when absorbed give rise to a multitude of nervous and mental symptoms. From a single indisposition and malaise, from a slight soreness of the skin to the most torturing of neural-

gias, from an insignificant and often unheeded feeling of depression to the most aggravated cases of melancholia or mania, all these shades and different intensities of nervous and mental disorders may arise from such vulnerable or damaged kidneys, the demonstrable evidence of disease in these organs being casts alone, the albumin being completely absent.

Again, there are a number of cases, and I have quite frequently met them in my practice during the last five or six years, in which periodical or intermittent albuminuria is the feature and where the albumin is in evidence only when a nerve storm of unusual severity has set in. I have often diagnosed in such persons by the presence of casts, the vulnerable kidney which for want of a better name I have described as latent and intermittent nephritis without albuminuria (*Medical News*, Oct. 20, 1894). For a long time, often for weeks or months, such patients may not have any albuminuria, casts only being demonstrable; or even these may disappear and the urine be absolutely normal, and yet there is a dormant pathologic condition under which certain and favoring conditions are rekindled into activity. Such persons may live in comparative comfort for a time, until a nerve and kidney storm brought on by a variety of causes, a cold, excessive physical or mental strain and worry, an attack of an infectious disease, a fall, etc., renders the latent affection an active one.

In my practice it is an almost daily experience for me to hear that my diagnosis of vulnerable kidney, which I held responsible for certain nervous or mental affections had not been corroborated or verified by other physicians, who had repeatedly examined and "analyzed" the urine and found everything in a normal condition. Aside from such examinations, which are based upon chemic analysis exclusively and which I once more desire to state are unreliable, misleading and fallacious, there are such as, made with the microscope, fail to reveal any morphologic evidence of kidney disease in the shape of casts. There are several reasons why the examination for casts under such conditions may prove negative or may be looked upon as negative: 1, Microscopic incompetency, which is very general.[1] 2, the kidney trouble may have become latent, the casts are really absent, and there being neither albuminuria nor casts, the unwarrantable statement is made, there is no Bright's disease, the kidneys are healthy, while the correct statement would have been that at the present time there is no evidence of kidney disease. 3, in spite of competency, the casts are not detected because of insufficient instrumental equipment. No examination of this sort ought to be considered as final without the use of the centrifuge, an instrument which ought to be in the hands of every physician who is often called upon to make urinary examinations. 4, the examiner, even if he finds casts, may not attach any importance to them if unaccompanied by albuminuria. This, in my opinion, is an error of vital importance and one that is widely spread. Misleading experiments have helped to strengthen this misconception. Among other reasons why the presence of casts in the urine is alleged to be compatible with perfect health, is the finding of casts in the urine of athletes after great muscular exertion. Now nothing is more fallacious than to say that because a man is an athlete, therefore he is a type of health. The well known and often commented upon liability of such persons to disease, especially of the heart and the blood vessels in general, ought to counsel caution; again, the fact, that they generally die young, ought to serve as a pointer to the real state of affairs. So far as my own experience in this matter goes, I have time and again had an opportunity of demonstrating in young men, who used to be college athletes, the existence of hypertrophied hearts and the presence of casts (without albumin) in the urine. The clinical symptoms of their disease presented the mottled picture of neurasthenia. These were certainly damaged men and their kidneys were not only vulnerable, but actually diseased.

Besides neurasthenia, other neuroses, notably hysteria in its manifold manifestations, grow and thrive on a soil prepared by diseased kidneys in the pre-Brightic or pre-cirrhotic stage. By this I do not mean that hysteria is a result of this form of kidney disease, but the latter acts as provoking agent and converts into a fully developed disease what otherwise would have remained simply a predisposition.

Among the other symptoms which latent or intermittent chronic parenchymatous nephritis may give rise to, is that known as "dead fingers." I must confess that I have seen but few patients who complained of this symptom. Quite frequent, however, are disturbances of speech and memory. Aphasic phenomena are particularly apt to manifest themselves, often only in a rudimentary or fragmentary way. Inexplainable diarrheas, harassing coughs, huskiness of voice, itching of the skin, nettle rash, muscular twitchings, hot waves and rushes of blood to the head, with a host of other symptoms may be present.

In my experience, many cases of supposed malaria and grippe were nothing else than cases of acute or subacute nephritis, developing from the mild chronic form above alluded to. On the other hand, I believe that both these diseases are powerful factors in producing the trouble under discussion, giving rise to an acute infectious nephritis which ends in a slow, insidious chronic form without albuminuria. Especially is grippe apt to leave a chronic parenchymatous nephritis behind.

Migraine is often nothing else than a uremic paroxysm. During the attacks the casts increase in numbers. The same is true of other periodic headaches.

I have found casts in almost all cases of tabes and and paretic dementia that I have had an opportunity of examining. These patients rarely die from kidney disease, it is true; although they have casts in the urine for years, they may not present any uremic symptoms, but it is reasonable to infer that the diseased kidneys help to develop the disorders of the central nervous system and invite the diseases to which such patients finally succumb, such as pneumonia, erysipelas, etc.

As a prominent physical symptom of an existing chronic parenchymatous nephritis I have often seen, especially in men, a slight thickening of the temporal artery, with the characteristic tortuosities so common in the cirrhotic form of Bright's disease. Often it is only indicated by a temporal pulse stronger than normal. The main symptoms, however, are generally the subjective ones briefly outlined above.

[1] Microscopic incompetency is especially prevalent and apt to cause mischief in those who have taken a course in microscopy, bought an instrument and consider themselves experts. The curious notions some of these microscopists have about casts are almost incredible.

In conclusion, I would say that a person who has constantly, or from time to time, casts in the urine, even if they be only of the hyalin variety, must be considered damaged and prone to contract and succumb to other diseases. Again, albuminuria without casts is of exceedingly rare occurrence, while the opposite, casts without albuminuria, is very frequently met with.

A rational course of dietetics, above all the avoidance of rare meats and the derivatives of meat, such as meat soups and rich gravies often bring about great improvement and in some cases total disappearance of the casts, together with the subjective symptoms. As a curative remedy I have great faith in mercury, especially blue mass, administered in 5 grain doses twice a week, and small doses (5 grs.) of sodium iodid.

I have had patients under observation for many years who, by prudent living have managed to remain in a fair state of health, attending to their business and enjoying life in a quiet way, although casts would be from time to time demonstrated and slight uremic disturbances were not infrequent. If a proper hygiene is observed, latent or intermittent chronic parenchymatous nephritis does not seem to interfere materially with longevity in the well-to-do. It is different with people who have no means of properly taking care of themselves.

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Abstract of the Proceedings of the Eighth Annual Meeting, held in Chicago, Sept. 24, 25 and 26, 1895.

FIRST DAY—MORNING SESSION.

The Association met in the South Parlor of the Auditorium Hotel, and was called to order by the PRESIDENT, DR. J. HENRY CARSTENS, of Detroit, Mich.

After an Address of Welcome by DR. WM. E. QUINE, of Chicago, and a response by the President, the reading of papers was proceeded with.

DR. JAMES F. W. ROSS, of Toronto, read a paper entitled

BILATERAL SUPPURATING PAROTITIS.

He narrated a case in which after vaginal hysterectomy, the tenth day after the operation, the temperature rose to 103 degrees, and a swelling in each parotid gland presented itself. The swelling gradually increased. The sides of the face became enormously swollen, the eyelids were puffed, and the patient could scarcely open them. The complication he believes to be an unusual one, and for that reason brings it before the Association. Double parotitis is seen occasionally as one of the sequelæ of the infectious diseases, a distinctly septic disease. It is difficult to believe that the removal of the ovaries can produce a parotitis. If parotitis has a peculiar tendency to follow the removal of the uterus, we should have sufficient data upon the subject to make us well aware of this fact also.

DR. EDWIN RICKETTS, of Cincinnati, related a similar case in which two days after the removal of the diseased appendages, a double parotitis made its appearance.

DR. C. C. FREDERICK, of Buffalo, saw a case in the practice of a prominent practitioner in Buffalo a few years ago in which a double parotitis followed ovariotomy. The woman made a good recovery. No suppuration in the case.

DR. JAMES F. BALDWIN, of Columbus, narrated an instance in which the parotitis was limited to the left side, it having followed a vaginal hysterectomy about the third day, accompanied by elevation of temperature, pain and swelling.

DR. W. G. MACDONALD, of Albany, said that parotitis associated with the removal of the uterine appendages was not a new thing. Among the earlier operators it was not an unusual or uncommon complication. The patients, however, usually died. He saw one case following a supravaginal hysterectomy. He had also seen it after amputations of the thigh.

DR. JOHN M. AULD, of Chicago, had seen one case of non-suppurative parotitis of one side. It followed perineorrhaphy and hemorrhoids.

DR. H. W. LONGYEAR, of Detroit, had seen parotitis associated with typhoid fever.

DR. A. H. CORDIER, of Kansas City, Mo., said parotitis occurs with greater frequency than is supposed in connection with operations involving the ovaries and tubes. He is inclined to believe that there is a sympathetic relationship between the ovaries and the parotid gland.

DR. A. H. FERGUSON, of Chicago, asked as to the condition of the patient's mouth at the time of the parotitis. In scarlet fever, diphtheria, and a number of diseases associated with disease of the uterine appendages, extension takes place to the parotid gland. In such cases the mouth is foul, and if it can be kept clean parotitis is not so apt to occur.

DR. ROSS said it is well known that the parotid glands, the thyroid glands, and the submaxillary glands frequently become inflamed in inflammatory disease of the testicles; but as to inflammation of the ovaries, we are not so sure. He could not say as to the condition of his patient's mouth at the time of operation.

INTERMEDIATE TREATMENT OF PUERPERAL SEPSIS.

This paper was read by DR. A. B. MILLER, of Syracuse, N. Y. The author summarized his remarks as follows: 1, that suspected infection of the birth canal should be confirmed when possible by a bacteriologic examination of vaginal secretions, and every means of differentiating it from other affections should be resorted to, that it may be treated rationally either by medicine or surgery; 2, irrigation and antiseptics destroy the nutrition of the parts when continued, and, furnishing increased moisture, improve the field for the development of microörganisms, aside from the danger of death resulting from the antiseptic used; 3, that the birth canal can be kept comparatively dry by absorbent dressing, removing the culture media and arresting the development of germs and infection until the abraded parts have been repaired.

DR. L. S. MCMURTRY, of Louisville, Ky., followed with a paper entitled

THE INDICATIONS FOR OPERATION IN PUERPERAL SEPSIS.

Since operative surgery a few years ago disclosed the various lesions of pelvic disease, it has been known that pregnancy and the puerperal state may be complicated by pre-existing inflammatory diseases of the uterine appendages, tumors, and septic accumulations inside the pelvis. Chronic and circumscribed disease of this character may be converted into acute and diffuse inflammatory conditions by the trauma of labor. Puerperal sepsis may in this way be the result of pre-existing disease. This class of cases must necessarily be small, since women thus diseased are as a rule, sterile. That such cases necessarily come within the scope of operative treatment will be generally conceded. The indications and guides for operative interference in this class of cases were then considered by the author. In all cases of puerperal sepsis the most careful examination of the pelvic organs should be made.

In conclusion, he alluded to the class of puerperal cases wherein the local symptoms are those of diffuse peritonitis without localization of lesions, but where the uterus is presumbably the focus of infection. This class of cases has recently been discussed extensively in relation to treatment by hysterectomy. Empirical operations in surgery are likely to prove more disastrous than similar methods of treatment in medicine. The gravity of such cases may often justify exploration and drainage, but the more extensive operation of hysterectomy will almost invariably prove disastrous.

DR. W. E. B. DAVIS, of Birmingham, said with reference to cases of pueperal sepsis, where the temperature runs high, they usually die in from a week to ten days, and he believes surgery offers very little hope.

DR. HERMAN E. HAYD, of Buffalo, said that where a septic condition takes place in the endometrium, or where there remains a portion of the placenta which breaks down, he is satisfied that a sharp curette should be used. With a sharp curette the surgeon can scrape away a good piece of tissue and yet do very little harm.

DR. WM. WARREN POTTER, of Buffalo, said there was no puerperal fever except it be due to infection; that if the history of these cases were carefully traced, the gynecologist would find underlying somewhere infection, which may be carried into the genital tract either by the obstetrician himself, or by the environment of the puerperal woman; hence the great collateral interest lying closely alongside this subject was the one of preventive medicine. The impor-

tant question was aseptic midwifery. If aseptic midwifery were practiced in every case there would be no puerperal sepsis, no ophthalmia neonatorum.

DR. W. P. MANTON, of Detroit, had never had in his private practice a case of puerperal sepsis. In reference to the use of the curette it is an instrument, if properly used, which is absolutely devoid of harm.

DR. H. W. LONGYEAR believes that when the uterus is packed full of gauze, it prevents the flow of mucus, blood and serum. While more or less serum may possibly come away, fragments of placenta or blood clots will certainly be retained. Rise of temperature, etc., should not be an indication for surgical interference in puerperal sepsis.

DR. WM. H. MYERS, of Fort Wayne, emphasized the importance of differentiating between septicemia and pyemia in considering the subject under discussion.

DR. C. C. FREDERICK said that out of forty cases of puerperal septicemia which he had seen in consultation in the last eight years, only two had died. Nothing could be found in the uterus and there were hardly any localized symptoms.

DR. JAMES F. W. ROSS, of Toronto, said the subject was of the greatest importance, inasmuch as a new craze at the present time had seized the profession, that of taking out the uterus in cases in which it is unnecessary, in his opinion, to remove that organ. The pendulum had swung too far, as it did when the removal of the ovaries was undertaken for vague symptoms, and the Association should take some means of swinging it back again to its normal position.

DR. W. G. MACDONALD, of Albany, related a case in which he favored the use of the sharp curette.

DR. SHERWOOD DUNN, late of Paris, France, said that in the Broca Hospital, Paris, there were 184 beds, 48 of which were devoted to obstetrical cases. In his three years' connection with the hospital service there, no case of confinement had ever been followed by any septic condition.

DR. A. J. BURGESS, of Milwaukee, said in cases of uterine traumatism, especially in abortions, where there are retained septic tampons within the uterus, it is absolutely impossible to curette them away with a dull instrument. He had seen the dull curette used for half an hour at a time, and yet two days afterward pieces of membranes or clots had come away, the size of a hen's egg. With a sharp curette everything can be removed.

DR. A. H. CORDIER, of Kansas City, Mo., emphasized the importance of treating every case of puerperal sepsis as an individual one. Where surgical interference is called for, it must be resorted to early if we expect to save lives.

DR. G. E. KRIEGER, of Chicago, predicted that in time we would treat puerperal sepsis very much in the same manner as we treat diphtheria with serum.

DR. J. HENRY CARSTENS, of Detroit, emphasized the importance of differentiating between the different forms of infection. While the obstetrician may in some cases infect his patient, he believes in auto-infection. He thinks a sharp curette is not necessary for removing the shreds of membrane or other *debris* that may be left.

DR. FREDERICK BLUME, of Pittsburg, said it had been proved years ago that in 50 per cent. of healthy women there were found streptococci or other pathogenic microörganisms in the vagina. He uses a sharp curette for curetting the uterus.

DR. MARCUS ROSENWASSER, of Cleveland, Ohio, read a paper entitled, "Exceptional Location of the Blood Clot in a Case of Ruptured Ectopic Pregnancy." The case reported was an extremely interesting one, and it was presented with the hope that the knowledge of such possibility might prevent future confusion of an otherwise clear diagnosis.

DR. H. W. LONGYEAR, of Detroit, reported a case where a woman bled for several months. On opening the abdomen, the cavity was found filled with blood and clots, and after a tedious operation he was compelled to leave some of the clots in the abdomen. The patient died of shock some three or four hours after operation.

DR. JAMES F. W. ROSS, of Toronto, reported a case of acute general peritonitis produced by the rupture of a suppurating clot. After an ectopic gestation this clot was found lying in the neighborhood of the broad ligament, and was not in the least connected with the tube.

DR. EDWIN RICKETTS, of Cincinnati, said the cases reported impressed us as to the importance of the earliest possible diagnosis. The subjective symptoms should be more carefully considered.

DR. W. E. B. DAVIS, of Birmingham, related a case, the wife of a physician, who was delivered at full term of uterine pregnancy. Then a mass was detected in the right lumbar region which continued to grow larger. The patient was losing blood. Operation revealed ectopic gestation. The bleeding was easily controlled, a rapid operation done, but the patient died from shock. Dr. Davis also cited another interesting case.

DR. RUFUS B. HALL, of Cincinnati, emphasized the necessity of early operation, or, at least, an early exploration in all instances of obscure abdominal disease. After an experience of fifteen operations for ectopic pregnancy, he is more and more convinced of the necessity of early operative interference.

DR. THOMAS J. MAXWELL, of Keokuk, Iowa, called attention to transfusion with common salt solution to tide over severe cases of hemorrhage.

DR. L. H. DUNNING, of Indianapolis, followed with a paper entitled

RUPTURED INTERSTITIAL PREGNANCY.

After describing the case in detail, the author drew the following conclusions:

1. Ruptured tubo-uterine pregnancy is more frequently fatal than ruptured tubal pregnancy, for the reasons that in the latter case the rupture frequently takes place through the abdominal end of the tube, in which case but slightly vascular adventitious tissue is torn, while in the former case vascular uterine tissue is torn. Again, in tubal pregnancy not infrequently the rupture takes place through the inferior surface of the tube into the folds of the broad ligaments, and thus the amount of hemorrhage is limited, while in tubo-uterine pregnancy such a rupture is rare.

2. In ruptured tubo-uterine pregnancy before the fifth month, unless the abdominal section is done early, the anemia will be profound, so that the patient will be unable to withstand any operation involving prolonged anesthesia and manipulation. The operation should be as free from shock as possible.

3. There is no pedicle to tie.

4. All actively bleeding points must be secured by ligature.

5. Mr. Tait proposes hysterectomy as a proper procedure in such a case. Unquestionably, if the patient is not too greatly shocked or anemic, such procedure would be clearly indicated.

6. As a measure attended by less risk of shock, the writer proposes the tying of bleeding arteries, clearing the gestation cavity of the ovum, the establishment of free communication between the gestation cavity and the uterine cavity; the establishment of free drainage by means of tube and gauze, and finally the closure of the rent in the uterine wall by deep and half-deep sutures, or by Czerny and Lembert stitches, or instead of this method of closure, the stitching of the walls of the gestation cavity to the lower angle of the incision with the drainage from above and through the uterine cavity, and finally closure of the upper opening by tying deep sutures placed and left untied at the time of the operation. This latter method will probably be found applicable only in a limited number of cases, namely, in those where the uterus is freely movable and can be brought to the abdominal wall without tension. Whether the methods proposed by the writer have ever been employed, he does not know, and whether they will prove of value, a trial must demonstrate.

DR. T. J. WATKINS, of Chicago, had met with a number of cases of extra-uterine pregnancy, but none of interstitial pregnancy with rupture. He had one case where the tube had ruptured, the placenta had grown fast to the cornu of the uterus, and where it was impossible to form a pedicle, the condition in the case being similar to that of an interstitial pregnancy.

DR. BYRON ROBINSON, of Chicago, was fortunate enough to examine a specimen of Mr. Tait's. So far as operating on these cases is concerned, it seems to him that anything other than hysterectomy means death to the woman.

DR. HENRY T. BYFORD, of Chicago, said that while he had never encountered a case of interstitial pregnancy, it was very essential to know how to proceed in such cases by surgical interference.

DR. A. H. CORDIER, of Kansas City, Mo., had seen one case of interstitial pregnancy in the practice of Dr. Lanphear, the uterus containing in addition several fibroids. An abdominal hysterectomy was performed.

DR. E. T. TAPPEY, of Detroit, read a paper entitled "Intra-Peritoneal Adhesions." He said that abdominal surgery in the last few years had established among other things, that many of the pains, vague uncomfortable feelings and so-called dyspepsias are caused by adhesions of various organs in the abdominal and pelvic cavities. The question of diagnosis is often perplexing, and in many instances impossible without abdominal section. Wherever there is

pain and palpation does not reveal any tumor or other enlargement, adhesions are one of the possible causes. The author believes it proper to subject cases of chronic dyspepsia, chronic and obstinate constipation, and cases of persistent pain which is caused by the accumulation of flatus, to exploratory incision to determine whether there be adhesions and for the purpose of severing them.

DR. W. G. MACDONALD, of Albany, read a paper entitled

INTESTINAL OBSTRUCTION—CLINICAL OBSERVATIONS.

He said in no branch of abdominal surgery is precise diagnosis so difficult or operative procedures more taxing to the ingenuity of the surgeon. At the present time, surgeons of experience are quite unwilling to give a definite opinion until the abdomen is opened and closed. There are a large group of cases of ileus which may be regarded as purely symptomatic, a condition in which the continuity of the intestinal tube is interrupted, but the obstruction is due to conditions of paralysis in the intestinal wall. The treatment can not always be preventive from conditions which arise during operations. The enucleation of pus tubes or an extra-uterine pregnancy involves the leaving of extensive denuded surfaces to which intestines readily attach themselves, and those who have done secondary section can readily testify to the number of innocent adhesions found as a result of primary operations.

A CLINICAL CONTRIBUTION TO THE STUDY OF THE LATERAL DISPLACEMENTS OF THE UTERUS.

DR. EDWARD J. ILL, of Newark read this paper. After reviewing the literature, the reader speaks of the importance of this abnormal condition, and thinks it has been generally overlooked, the patient's symptoms being attributed to other ailments. He had collected from his last year's office case-book all cases of lateral displacements except such as come with tumors. He shows that 14.2 per cent. had lateral displacement. He draws especial attention to those cases which he considers to be congenital and where the pain is referred to the elongated broad ligament. The symptoms begin early in the patient's sexual life, in severer cases progressing gradually to complete invalidism. He then relates *in extenso* several histories. He describes a typical case. The non-operative treatment consists of endeavoring to elongate the shortened ligament by the use of dry wool or oakum tampons pushed between the cervix and ilium on the side of the shortened ligament, keeping the tampon in place by a second and third one. All this is to be retained for forty-eight hours. A hot douche with the patient on her knees and elbows twice daily when the tampons are *in situ*, is also ordered. He related two cases of extreme suffering where total extirpation of the uterus, tubes, ovaries and broad ligament was deemed advisable after years of unsuccessful treatment, both of which are much relieved of their suffering.

DR. X. O. WERDER, of Pittsburg, read a paper on

SOME OF THE INDICATIONS AND ADVANTAGES OF VAGINAL HYSTERO-SALPINGO-OÖPHORECTOMY.

He said the operative results in suppurative disease of the pelvis in the hands of the abdominal surgeon form one of the proudest chapters of modern surgery. While a more careful technique and a more thorough operation has lessened the number of fatal cases, they had not been entirely eliminated. Hysterectomy with salpingo-oöphorectomy in suppurative disease of the pelvis not only allows us to remove the nidus of infection more completely, but it gives the patient the very best chance for complete recovery without adding any additional risk to the operation. The mortality compares favorably with that of salpingo-oöphorectomy alone. He thinks hystero-salpingo-oöphorectomy is unquestionably the operation of the future; but whether vaginal or abdominal, still remains *sub judice*. The vaginal method has many features to recommend it. It precludes the possibility of ventral hernia and intestinal and omental adhesions to the line of incision; is followed by less shock because of the minimum exposure of the peritoneum during the operation, and absence of manipulation of the abdominal viscera. Convalescence is more rapid and recovery more complete. Two cases of vaginal hysterectomy were then reported by the author.

The PRESIDENT, DR. J. HENRY CARSTENS, of Detroit, delivered his Address. He selected for his subject

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

The Address was replete with interesting points concerning the growth of the Association. In speaking of specialists, he said: "What we do is not for us, but for the whole profession. We think we can do more by limiting ourselves to a particular branch, and what little mite we add is not for us specialists, but is to be the inheritance of the whole profession. We want the whole profession to be elevated, to become accurate and as near scientific as possible in medicine. We want to raise medicine in the estimate of the laity, so that it shall not be laughed at and ridiculed in the pulpit or court room, but that it shall shine forth as an art and as a science and the noblest vocation."

DR. F. BLUME, of Pittsburg, read a paper entitled

ETIOLOGY OF ECLAMPSIA GRAVIDARUM.

He said the etiology of this grave complication of labor is still undecided. The theory, which has found the most advocates, is based upon the investigations of Lever, who first called attention to the relations between albuminuria and puerperal convulsions. Lever's observations were confirmed by various authors and led to the view that the attacks were the result of blood poisoning by urea; that they were uremic and identical with those occurring in kidney diseases. According to Spiegelberg, all cases of true eclampsia are of uremic origin. The cause is a kidney lesion which either preëxisted or developed during pregnancy. In 400 cases of eclampsia observed by Olshausen, Dührssen and Gusserow, albuminuria was present in 98 per cent. Trantenroth found that albuminuria developed during the second half of gestation in 46 per cent. in women whose kidneys were normal before conception took place.

THE PROPHYLACTIC TREATMENT OF ECLAMPSIA GRAVIDARUM.

This paper was read by DR. H. W. LONGYEAR, of Detroit. The author recognizes two varieties of convulsions that may occur as a result of the pregnant or puerperal condition—first, those of a purely nervous character, which usually occur in women of neurotic habit, and those who are predisposed to epileptic attacks; and, second, convulsions which occur as a result of some change in the blood and tissues of the patient due to renal disease, as especially indicated by the presence of albumin in the urine.

Early diagnosis is of the utmost importance to the success of any preventive treatment, and to insure this the urine of every pregnant woman should be systematically examined by the physician every two weeks after the sixth month. When albumin is found to be present, immediate treatment should be begun and daily examinations of the urine made thereafter. The author divided the prophylactic treatment into dietetic, medicinal and operative, the latter to be adopted as a last resort. In simple cases of albuminuria without scanty secretion, many patients will do well and be tided along to safe confinement on an exclusive milk diet with medication.

DR. W. P. MANTON, of Detroit, followed with a contribution entitled

SO-CALLED PUERPERAL ECLAMPSIA IN ITS RELATION TO INSANITY.

The author had recourse to three sources of information—statistics from private practice; statistics from the lying-in hospitals, and the records of hospitals for the insane. Never having had a case of insanity following eclampsia in his own practice, he had collected 8,868 cases of delivery reported by eight competent observers, published in current medical literature. In this number he found that eclampsia is noted as having occurred thirty-three times. In not a single instance is it stated that insanity followed the convulsive attacks. During the four years 1891-1894 inclusive, 282 women were delivered in the wards of the Detroit Woman's Hospital, eclampsia occurring in 2 cases. Both of these recovered without symptoms of mental alienation. This seems the more remarkable, since of the 282 patients confined, 233 were unmarried. During the same period there were admitted into the three principal asylums of Michigan with which he is connected, 1,271 female patients. In this number, the insanity was attributed to puerperal causes in 110 instances, but in two cases only was eclampsia put down as the exciting cause.

DR. RUFUS B. HALL, of Cincinnati, Ohio, read a paper upon

THE PREVENTION OF PELVIC INFLAMMATION IN WOMEN.

He pointed out some of its most frequent causes, placing septic infection following abortion and gonorrheal infection as the most important. He advocated the dissemination of knowledge among the laity by the family physician as a potent remedy for the prevention of these troubles. He especially advocated that women should be warned by their physicians of the great danger of abortions in the early months of pregnancy. It is well recognized by the profession that many married women produce abortion in the early weeks of pregnancy, and it is during this time that the membranes are retained and septic endometritis is induced,

leading to salpingitis, pyosalpinx, and suppurating ovaries later. He also advocated that the profession should impart knowledge on every legitimate occasion on the subject of gonorrheal infection in young men and boys. It is well known that men frequently infect their wives, years after they themselves believe they are cured of their gonorrhea. The author believes that if the profession impart this knowledge to the laity, it will only be a short time when many of the abdominal sections now made for the relief of inflammatory diseases will not be called for.

DR. A. H. CORDIER, of Kansas City, Mo., read a paper entitled

DIAGNOSIS OF INTRA-ABDOMINAL TUMORS.

The author outlined the methods and procedures which should be followed in examining patients. Tumors through which gases are detected by gurgling indicate either an involvement of the bowel in the tumor, or pressure of the growth on the bowel with adhesions to the same. If this symptom be coupled with a history of a pyloric cancer or a cecal growth, it is confirmatory in its indications. Some growths have a disposition to change positions, but all growths have one or more attachments, and it is safe to infer that this attachment is to the site at which the neoplasm had its beginning, and its movements will be only around an arc of a circle with the pedicle attachment to the diagnostic point. Adhesions may prevent a growth from moving, or may anchor a tumor in a locality far from its original point of starting. The history of inflammatory attacks and the pain will come to the rescue here. The character of the pain and the amount and area of tenderness are invaluable aids. The withdrawal of free fluid from the peritoneum will often show the presence of a tumor before undetected. Pus in the pelvis is one of the easiest conditions to diagnose.

DR. JAMES F. W. ROSS, of Toronto, read a paper entitled

PNEUMO-PERITONEUM.

The author reported a very instructive case of this disease. He classified pneumo-peritoneum as follows: First, *tympanites intra-intestina*. Second, *tympanites extra-intestina*. (*a*), traumatic: 1, from without; 2, from within. (*b*), non-traumatic, or spontaneous: 1, without liquid, gas odorless; 2, ascites and gas odorless or fetid; 3, pus and fetid gas. Third, *tympanites intra et extra intestina*.

With regard to the treatment, exploration by means of a knife and the finger is free from the objection that obtains in the case of a stab in the dark by a trochar. In all of these cases the author believes an exploratory celiotomy should be performed. Even after the removal of the pressure on the diaphragm the breathing improves. It has been stated by one operator that it is necessary in puncturing such cases to allow the gas to escape very gradually.

DR. HERMAN E. HAYD, of Buffalo, reported a case of

LARGE HYDRONEPHROTIC CYST SIMULATING OVARIAN TUMOR—ABDOMINAL HYSTERECTOMY, FOLLOWED BY RECOVERY.

This case was interesting: 1, on account of the large size of the hydronephrotic cyst, as well as the absence of pain or distress in its formation; 2, the obscurity of diagnosis, or, at all events, the simulation of the cyst with ovarian tumor; 3, the increased functional activity of the one kidney—in fact, its ability to vicariously functionate for the other organ; 4, the ease and facility with which the tumor was removed through the abdomen, and the uninterrupted convalescence for thirteen days; 5, at no time was albumin found in the urine, and quantitatively and qualitatively the secretion of urine was above the average. At one testing, she passed 287 grains of urea in twenty-four hours. There was no evidence of stone or symptoms of previous ureteritis.

DR. WM. H. MYERS, of Fort Wayne, Ind., read a paper entitled

THE LIMITATION OF CRANIOTOMY.

The author said that of late years the happy results following Cæsarean section and Porro's operation have done much to efface a dreadful feeling that we must in such cases decide whether the life of the mother or that of the child is to have preference, seeing it is now quite possible to save both. The high death rate after craniotomy we must refer to the period preceding the introduction of asepsis and antisepsis. The fatality of Cæsarean section has radically changed owing to the modifications in the treatment of the uterine wound, and a perfect technique; these have lowered approximately the death rate to that which is claimed for difficult embryotomy, a mortality of 10 per cent. with the saving of 95 per cent. of infantile life. The author urges that Cæsarean section should be performed as soon as we can be assured of diagnosis.

DR. EDWIN RICKETTS, of Cincinnati, reported three cases of gall bladder surgery, and drew the following conclusions: 1, the continual absence of bile in the intestinal discharges does not necessarily signify that there is no operative condition of the gall bladder existing; 2, the bile may flow periodically, and when this is true, symptoms demanding surgical interference are generally present; 3, jaundice, when present, is very satisfactory evidence of biliary obstruction, although it is not always present; 4, pains in the region of the gall bladder coming on at intervals and in connection with jaundice, or without jaundice, in connection with clay-colored stools, is positive proof of biliary obstruction, and when this is true, an operation should be resorted to; 5, persistent clay-colored stools, whether we have severe pain or jaundice with them, are the most reliable symptoms governing operative interference; 6, when a stone is primarily engaged in the gall bladder, then a pathologic lesion begins; 7, we may have an obstruction of the common duct due to external trauma, such as a blow received over the region of the liver. This may produce a catarrhal condition of the common duct amounting to entire stoppage of the flow of bile; 8, we may have a solitary calculus engaged in the lower end of the gall bladder, causing thickening of the bladder wall and causing periodical escape of the infected or non-infected contents; 9, we may have calculi formed in the hepatic or common duct; 10, the importance of probing the hepatic duct through the incised bladder in all cases operated upon, whether the condition present be catarrhal alone or with the presence of stone.

DR. W. E. B. DAVIS, of Birmingham, Ala., contributed a very interesting paper entitled

OPERATIVE PROCEDURES FOR THE RELIEF OF OBSTRUCTION OF THE BILIARY DUCTS.

The author alluded to a large number of experiments which he had made on dogs, and in which he had tested the value of gauze in draining bile in injuries of the gall bladder and ducts. He reported cases where he had removed the gall bladder without tying the duct by packing with iodoform gauze. The animals got well. In other instances where he incised the gall bladder and ducts and packed with gauze around the openings, no stitches being used, the animals recovered. Complete walling off of the general cavity was noted when the abdomen of the animals was re-opened. A number of cases were examined at the end of forty-eight hours. Dr. Davis also reported a case on the human being in which he had removed the gall bladder and a portion of the cystic duct where there was obstruction in the common duct, packed with gauze after introducing a glass drainage tube, and there was also complete walling off of the general cavity. He advises that in cases of obstruction of the common duct, that no attempt should be made to suture the opening after the obstruction has been removed, as the patient's condition is nearly always serious and a prolonged operation will terminate fatally. The obstruction should always be removed, if possible. Dr. Davis' experiments demonstrate conclusively that the peritoneum is capable of taking care of a small amount of bile, but that large quantities or the constant extravasation of it will produce a fatal peritonitis usually in twenty-four to forty-eight hours. He thinks the field of cholecystenterostomy is a very limited one.

DR. W. B. DORSETT, of St. Louis, read a paper entitled

THE USE AND ABUSE OF THE UTERINE CURETTE.

The more the author had used and seen used the uterine curette, the more he was impressed with the following ideas: that when used, the selection as to the shape and form of the instrument in a given case is not always a wise one; that a proper knowledge of its use should be obtained before trying to use it; that it is not a cure-all. Its use should be only in conjunction with other treatment. He looks upon the blunt curette (as sold in the shops) as a dangerous instrument. The instrument with a sharp cutting edge, properly constructed, is a most useful one, and in the treatment of intra-uterine inflammatory conditions is the *sine qua non* of success. In order to secure a good scraping instrument the sharp edge should stand at an angle of 60 degrees to the shaft or handle. A greater angle will not scrape thoroughly, and a lesser angle is liable to incise the uterine wall unless used with a great deal of care. Cases of perforation of the uterine wall are on record, and he thinks they are due to want of care in the selection of the proper instrument. The dull or blunt curette should never and under no circumstances be used.

DR. THOMAS J. MAXWELL, of Keokuk, Iowa, followed with a paper on

SOME ANOMALIES FOUND IN ABDOMINAL SURGERY.

In the first case reported by the author, he made an incision in the linea alba and discovered a reddish tumor quite unlike a pearl-colored ovarian cyst. The tumor was about seven inches in diameter and proved to be the uterus containing an interstitial fibroid. An incision about four inches in length through the anterior fundus was made and a white fibrous tumor was shelled out with the fingers, of the dimensions of a cocoanut. The incision into the uterus was closed with buried catgut sutures, fortified with one silk suture in the center of the cut. A large ovarian tumor was then brought into view, attached by a very broad pedicle to the right broad ligament. The tumor was emptied of its contents, two and one-half gallons, and proved to be a monocyst. The author thinks the surgeon of to-day would have performed an hysterectomy. He believes it is the first case where an interstitial fibroid, complicating a large ovarian tumor, was enucleated, leaving the uterus intact. He is of opinion that many uteri and their adnexa might be preserved by a similar procedure, and the patients left unmutilated. The patient recovered. Two other interesting cases were reported.

SHOULD INTRA-UTERINE INJECTIONS OF GLYCERIN BE USED FOR THE INDUCTION OF LABOR?

This paper was read by DR. B. M. HYPES, of St. Louis. The author concludes that these injections are often inefficient, especially so in doses under 50 c. cm. They are liable to be followed by shock, air embolism, thrombosis, metritis and sepsis. They may and sometimes do produce glycerin poisoning—that is, decomposition of the blood corpuscles, resulting in diseases of the various organs, but more especially in nephritis with hemoglobinuria. The method involves no consideration of the life of the child and hence results in great mortality. Its use should be abandoned, or the dosage reduced, especially in subjects with prior existing kidney affections.

DR. M. B. WARD, of Topeka, Kan., read a paper entitled

HAS GYNECOLOGY RECEIVED JUST RECOGNITION AS A SPECIALTY?

The purpose of this paper was to call attention to the efforts necessary on the part of the Fellows of the Society, and other members of the profession, to elevate to a position with the other specialties the standard of gynecology, and at the same time to discuss the best means to educate the profession and laity to the all-important truth that to be a gynecologist one can not at the same time be a general practitioner. As specialists, our duty is clearly in the line of spreading the gospel of truth regarding the proper methods of examination and treatment of the numerous diseases peculiar to the female sex, in order that every physician shall have a reasonably intelligent understanding of the methods of dealing with the simpler forms of diseases. Dr. Ward said the line must be drawn, and when once fixed, strictly followed, before we can expect to command and receive just recognition as gynecologic specialists. This advice must naturally mean a great financial sacrifice on the part of those who have been combining the entire field of surgery with gynecology. Such a sacrifice, however, will be as bread cast upon the waters to return after many days. It may even temporarily almost take the bread from the mouths of our children, nevertheless it is the only course to pursue if gynecology is ever to be recognized as a specialty whose disciples shall receive the encomiums to which they are justly entitled.

DR. L. H. LAIDLEY, of St. Louis, Mo., read a paper entitled

SURGICAL TREATMENT OF PERFORATION OF THE BOWEL IN TYPHOID FEVER.

The author in reviewing this subject concludes that an early diagnosis and operation offer the greatest chances for recovery. If perforation of the bowel exists, it is the duty of the surgeon to make an exploratory incision, close up the opening and cleanse the abdomen. The more rapidly the operation is made in closing the perforation, which is usually single, and because of the danger in prolonging the operation, the better. In selecting a method for the closure of the perforation a Lembert suture should be used in small openings; in the larger openings, when the lumen of the bowel is contracted by the use of the interrupted suture, resection with the use of the Murphy button is the most advisable course to pursue. The author urges that greater interest be taken in educating the profession to select the cases, many of which are overlooked, to be placed in the hands of the surgeon and thereby reduce the mortality less than 100 per cent. which heretofore has prevailed.

DR. J. B. MURPHY, of Chicago, followed with some remarks on "Typhoid Peritonitis," in which he reported some twenty-eight cases that had been operated upon by different surgeons. A case reported by Dr. Van Hook, of Chicago, was the first to recover. Another case was operated on by Dr. Abbe, and one by Dr. Ill, both of which recovered. Dr. Murphy also reported cases upon which he had himself operated, which were followed by recovery. He holds that early diagnosis and prompt operative interference offer the greatest chances for recovery.

DR. H. W. LONGYEAR, of Detroit, read a paper entitled

KRAUROSIS VULVÆ—A CONTRIBUTION TO ITS PATHOLOGY AND THERAPEUTICS.

All of the cases of this affection seen by the author had been in women who had passed the fortieth year, and in each case the symptoms were manifested coincidentally with those experienced by the patient due to the menopause. In the first case in which he recognized the disease the woman was still menstruating, although irregularly, and the symptoms of the kraurosis had troubled her for about a year, the local appearance of the disease indicating that it was in an early stage of development. In the second case the symptoms had been manifested for six or seven years, the patient's ovaries having been removed two years before he saw her, and before the menstrual function had entirely ceased, and the kraurosis was found to be in the advanced stage of atrophy. In the third case the symptoms of the disease began with the cessation of the menstrual function, and when examined by the author four years later, the kraurosis had attained what might be called, for comparison, the middle stage. The author then dwelt upon the treatment of this affection, which is both operative and medicinal.

NEURASTHENIA ACCOMPANYING AND SIMULATING PELVIC DISEASE.

This was the title of a paper contributed by DR. C. C. FREDERICK, of Buffalo. The author defined neurasthenia as an exhaustion of the nervous system, more particularly the sympathetic nervous system, due to malnutrition. After dealing with the symptoms encountered, he said there was a class of women in whom neurasthenia simulated pelvic disease. It occurs in those of a nervous temperament. It is a frequent ailment among our American women. It is seen alike among the rich and the poor, the fleshy and rotund, as well as the thin and spare of form. With reference to treatment, to correct so far as possible the habits of the patient which lead to nerve tire, general tonic treatment and good environment, and above all, the rest treatment of Mitchell, bid fair to do as much for these women as human skill had thus far devised. Many of them can be nearly or quite cured, and others only partially relieved. Removal of tender tubes and ovaries which are simply tender and not diseased, always adds to their suffering.

The following officers were elected:

President, Dr. Joseph Price, Philadelphia, Pa.
First Vice-President, Dr. A. H. Cordier, Kansas City, Mo.
Second Vice-President, Dr. Geo. S. Peck, Youngstown, Ohio.
Secretary, Dr. Wm. Warren Potter, Buffalo, N. Y.
Treasurer, Dr. X. O. Werder, Pittsburg, Pa.
Judicial Council, Drs. C. A. L. Reed, James F. W. Ross, L. S. McMurtry, A. Vander Veer, and J. Henry Carstens.

On motion, the Association adjourned to meet in the city of Richmond, Va., the second Tuesday in September, 1896.

Chicago Pathological Society.

Regular Meeting, June 10, 1895.

WELLER VAN HOOK, M.D., President, in the chair.

(*Concluded from p. 499.*)

DR. ARTHUR R. EDWARDS, of Chicago, read a paper on

A CASE OF SYRINGOMYELIA WITH BULBAR, CERVICAL AND LUMBAR LOCALIZATION AND ARTHROPATHY OF CERVICAL VERTEBRÆ.

The patient is a Bohemian, single, aged 25 years, and a shoemaker by profession. He has been in America two years and has had no previous disease. His father died at the age of 70; his mother is in good health. No nervous nor other disease exists in the family of patient. Uses beer moderately and denies any venereal history.

The present trouble began in May, 1893, two years before entrance into Cook County Hospital, with gastric disturbance, vomiting and eructations. Hematomesis is also recounted. At the same time, cramps and stiffness were observed in the arms, and in December, 1893, rigidity in the legs was noticed. Fibrillary contractions appeared in the

arms in direct ratio to a loss of their muscular power. Formification appeared eight months ago in the arms and had just been noted in the legs. Constipation has existed for one and one-half years. In December, 1893, a disturbance in speech alarmed the patient, but the troubled lasted only three weeks. Four months later, dysphagia prevented the patient from drinking or eating fluid foods with any facility and at the present time swallowing is only effected by flexing the head strongly upon the sternum. The patient atders. He has noticed no intellectual alteration. The forearm tributes his loss of power to carrying loads upon the shoulparalysis appeared at once on both sides. The spinal deformity appeared a year ago, after other symptoms had inaugurated the disease. The patient suffers from no pain over the spinal deformity, but rheumatic pains exist in the arms and over the trapezii muscles. Pains radiate from the

shoulders into the arms, but are not severe and are most frequent in warm weather. Slight pain has been experienced across anterior surface of ankles. Regarding sensation, the patient has observed that he can not feel well over the left sterno-cleido mastoid muscle.

Physical examination: scalp, skull, nose and ears negative. In pharynx, the examining finger detects a hard swelling corresponding to the spinal deformity. Tongue negative; also teeth, skin, lymph glands and joints. The pupils are equal and react perfectly to light and accommodation. Ophthalmoscopic examination negative. Ocular muscles and facial muscles normal. Intellect bright. Muscles of head and neck normal. Sterno-mastoids prominent on both sides of neck. Marked spinal prominence in cervical region, involving lowest three cervical vertebræ, convex posteriorly, admitting of motion in all directions without pain and tenderness. Shoulders can not be elevated very well. There is marked atrophy in trapezius, rhomboidei and lv. anguli scapulæ group on both sides. Also atrophy and paresis in deltoid and pectoralis muscles. Adductors of shoulders quite strong. Extensors and flexors of elbow and supinator and pronator group fairly preserved. Finger flexors distinctly weak, especially on the right side. Fingers firmly flexed and rigid, resisting passive and active efforts at extension. The wrist joints can be flexed and extended, but not when any considerable resistance is exerted by examiner. Adduction and abduction of fingers, good upon the left and limited upon the right side. Moderate respiratory expansion. Abdominal muscles weak (constipation). Flexors of trunk are weak while the extensors are strong. Flexors of thighs are normal on the left and somewhat weak on the right side. Extensors of both hips weak and considerably spastic. Knee extensors somewhat weaker, right than left, and the flexors of the same joint are markedly weaker on the right side. The ankle joints can be extended and flexed with moderate freedom and force. Adductors, abductors and both external and internal rotators fairly

strong. As the patient stands, the kyphosis in the cervical region is very pronounced as is a compensatory lumbar lordosis. The abdomen is prominent, the shoulders are decidedly round and the chin is held to sternum.

There is considerable wasting of both thenar and hypothenar eminences of hands. Slight wasting of forearms and in the regions most atrophied, fibrillary contractions are frequent. Triceps and forearm reflexes exaggerated considerably. Very marked periosteal reflexes. Abdominal, pectoral and gluteal reflexes very marked. Enormously tetanic patellar reflexes. No ankle clonus. Knee, hip and ankle joints spastic. Marked cremasteric reflexes. External genitalia negative. No ataxia. Marked girdle sensation across epigastrium.

Sensation: muscular sense perfect throughout body. Tactile sense normal everywhere save just beneath clavi-

cles and on sides of shoulder, where complete anesthesia exists. Sense of cold and heat correspond fairly well, although appreciation of heat is less preserved than that of cold. The photographs fully indicate to what extent the thermo-anesthesia obtains. All of the neck, part of face near the angles of the inferior maxillæ, the chest above the nipples, a small plaque in the right hypochondrium, the extensor surfaces of both arms and fore-arms, the flexor surface of the right fore-arm, the finger tips to a slight degree and the antero-external surface of the right thigh are the areas affected. Corresponding very accurately with areas of thermo-anesthesia above outlined, we find an absence of sense of pain. The skin areas in which analgesia and thermo-anesthesia are found are, however, acutely alive to tactile impressions.

In the case presented, the main interest centers in the diagnosis, since prognosis and treatment depend logically and chronologically upon the accuracy of the diagnosis. Grouping the symptoms, it is found that they fall under four main heads. Those referable: 1, to the pons; 2, to the cervical enlargement of the cord; 3, the lumbar enlargement; 4, to the spinal deformity.

The symptoms referable to the cervical enlargement of the cord are so characteristic that from them the diagnosis of syringomyelia can be made, and with them all other symptoms and signs can be harmonized. The muscular weakness and atrophy, especially of the muscles of the shoulder and of the small muscles of the hand, the fibrillary contractions and increased reflexors (wrist clonus) are characteristic of syringomyelia, when accompanied by sensory phenomena—partial or "disassociated" anesthesia. The photographs indicate the sensory disturbance as dark areas, produced by painting the skin with iodin. Over the dark areas there is an anesthesia to heat and cold and to pain. Heat and cold anesthesia in syringomelia do not always exactly correspond, and in this case there are numerous very circumscript areas on the border of the stained area where heat sensation is present and cold is absent and *vice versa*. The dark plaques represent areas where anesthesia to both heat and cold prevails. Tactile sensation and muscular sense are present everywhere except where tactile sense is impaired over small areas on the neck and chest. They are found even where thermo-anesthesia and analgesia exist.

In most instances the arm symptoms are the main findings. In the present case there is a small area (indicated in the illustration) in the right hypochondrium where thermo-anesthesia and analgesia are found. Also upon the antero-lateral surface of the right thigh, extending from the anterior superior spine of the ilium to the patella, is an extensive area over which the same partial anesthesia is present.

A fourth complexus of symptoms relates to the basal nuclei of the last of the cerebro-spinal nerves. The dysarthria and dysphagia are due to a gliomatosis in the medulla. Bulbar symptoms are not rare in syringomyelia [30, 31, 32]. Disturbances in deglutition are frequent (Leyden, Schultze, Westphal). Nausea and vomiting, due to irritation of the nucleus of the glossopharyngeal, occur as well as tinnitus aurium, vertigo, singultus, polyuria, amaurosis, amblyopia, unequal pupils, nystagmus. Facial paralysis is rather rare (Westphal, Schultze, Grasset, Starr, Chabanne, Raichline [32]). Paralysis of one vocal chord, of the tongue, of the ocular muscles and of the fifth nerve are recorded. Disturbances in the circulatory and respiratory mechanisms occur.

Multiple anatomic foci, which must be assumed to explain the separate groups of symptoms, occur in syringomyelia, either as separate deposits of gliomatous tissue or continuous gliomatous degeneration through the entire length of the cord. This anatomic fact explains every symptom in the case, if we can account for the spinal deformity.

A conspicuous physical sign in examination is the spinal deformity. The cervical kyphosis led several examining surgeons to diagnose tubercular spondylitis and recommend suspension. The difference between the two diagnoses, spondylitis and syringomyelia, in prognostic and therapeutic import is obvious. The subject of arthropathy in syringomyelia has attracted but little attention.

In syringomyelia, simple, painless, intermittent, obstinate hydrarthoses are observed. They resemble the analogous disturbances of tabes, occur chiefly in the arms and may result in epiphyseolysis.

With the preceding statement the subject of joint or bone alteration in syringomyelia is usually dismissed. The most exhaustive study of the affection is that of Sokoloff [2], who collected twenty cases and described three of his own. Graf added thirteen instances and Klemm reported two instances, so that some thirty-six reports exist. [28]

While considerable attention has been devoted to changes in other joints, not much has been written with reference to spinal alterations. Scoliosis is frequently observed. Broca [41], Morvan [45], Bernhardt [43], Roth (50 per cent., Morvan and Bruhl; Bernhardt sixteen times in eighteen cases; Roth five times in eight cases). Scoliosis corresponds in location to the earliest and most advanced intra-medullary changes. [42] Kyphosis is more rare. Scoliosis and kyphosis may be explained neuro-trophic (Kroenig) or as due to muscular weakness (Roth). Lordosis is rare. In the side view of photograph of our case, the kyphosis is explained by the action of the thoracic muscles antagonistic to the posterior muscles of the shoulder girdle, second by the action of gravity, and third by trophic changes. Comparison of the spinal arthropathies with those in other joints is appropriate in order to determine possible points of similarity.

Sokoloff believes more joint lesions will be found in syringomyelia when greater knowledge and more common recognition of the disease prevails.

In analyzing the symptoms of gliomatous arthropathies, we consider several criteria by which their existence is established.

1. *Latency.*—The joint affection is often overlooked by the patient or the lesion is first noted by the examining physician, who rarely can tell when the affection began.

2. *Fluid in Joint.*—Again, in marked contrast to tabes, the arthropathy of syringomyelia seldom produces those marked exudations which at once attract the attention of the tabetic patient. Klemm [27] admits that fluid plays a subordinate rôle in syringomyelia joints, while they constitute an important factor in tabes. In exceptional cases of syringomyelia, acute exudation may be observed in the joints and para-articular connective tissue, but it is usually transitory, unnoticed by patients and rarely marked in degree.

Klemm has stated that fluid is more frequent in neuropathic joints than in ordinary arthritis deformans, in which exudation is comparatively rare, or, if present, never so copious. Even in some cases of arthritis deformans of neuropathic origin the process runs without effusion. The rapidity of the secretion, its greater extent, and the invasion by the fluid of the para-articular tissues, differentiates neuropathic joints from arthritis deformans. Accurate differentiation from arthritis deformans is not superfluous, as joint alteration occurring in syringomyelia may be non-exudative, the arthrite sèche of French writers. Krauss [37] and Thiersch [38] recorded cases in which the primarily incorrect diagnosis of arthritis deformans was finally changed to arthropathia gliomatosa. In syringomyelic and tabetic arthropathies, however, intra- and extra-articular exudation plays a prominent part.

3. *Pain.*—Arthritis deformans is excessively painful, while there is no pain in neuropathic joints. A case is related [23] in which a patient painlessly opened a joint with a pair of scissors, and two cases are recorded (Czerny and Sokoloff) where the joints were resected without anesthesia. This complete or relative analgesia is an important diagnostic datum for tabetic and syringomyelic joints. Spontaneous painless fractures (three cases) and luxations also occur.

4. *Extra-articular bony Deposits.*—It is characteristic of neuropathic arthropathies that para-articular changes occur, expressed as ossification in the soft and bony structures near the joints as well as exostoses at some distance from the articulations. In syringomyelic and tabetic joints, osteophytes are observed external to the joint capsule in the muscles, tendons and fasciæ, while they are intracapsular in arthritis deformans—a most important and characteristic difference, according to Volkmann. Rotter believes that nodes occur only in the lower extremities after fracture, from separation of small particles of bone. Klemm combats this view and asserts that in the absence of history of joint trauma, extra-articular growths are highly characteristic of neuropathic joint disease. Previous change in the soft parts probably favors osseous deposit (atrophia muscularis lipomatosa pseudo-hypertrophica of Sokoloff and stretching with thickening of the joint capsule, favoring luxation).

5. *Prognosis.*—Sokoloff believes that the prognosis in gliomatous joints is not always unfavorable, but rather the reverse, consisting in a subluxation alone, stretching of the capsule or an inconspicuous cartilaginous erosion, which may exist for years without progression.

6. *Influence of Trauma.*—Sokoloff, the most exhaustive writer on the subject, lays much stress upon trauma, emphasizing the following points: that syringomyelia occurs in the laboring classes, that it may be easily overlooked on account of the analgesia present, and that trauma is an

important factor in tabetic arthropathy. Virchow, Rotter and v. Volkmann believe that trauma is always the cause[30] and that tabes is only a predisposing factor. Sonnenburg's conception[31] is that the mechanical theory is not sufficient, that tabetic arthropathies stand in a very intimate, if indeed not wholly investigated, relation to tabes, and that trauma may produce joint disease, protract and modify its course.

7. *Localization.*—Rotter found 18 per cent. of tabetic arthropathies in the upper and 80 per cent. in the lower extremities. Syringomyelic changes almost always occur in the upper extremities, a fact which can be used in differential diagnosis. The pathologic changes are in the upper extremities identical in the two affections. In the lower extremities, syringomyelic arthropathies occur so rarely as to prevent comparison.

8. *Motility.*—The joints are very movable in syringomyelia, contrasting sharply with the rigid articulations of arthritis deformans.

9. *Age.*—Syringomyelia occurs usually in the young, while arthritis deformans is a senile or adult disease.

10. *Course.*—Regarding chronicity, the gliomatous arthropathies present more chronic clinical history, in this respect resembling arthritis deformans. Syringomyelia has run as protracted a course as forty-three years (Marwedel[28]), thirty-six years (Gilles de la Tourette), forty years (Déjérine).

11. *Pathology.*—Anatomic differences between tabetic and gliomatous arthropathies do not exist, although local findings, either post-mortem or operative are rare. The pathologic changes vary greatly, there being dropsy in some parts and hypertrophy in others. Most frequently the two forms co-exist. The initial change is usually degeneration in the superficial parts of the articular cartilages (Virchow and v. Volkmann), while the deeper parts hypertrophy and ossify. The synovial membrane thickens, relaxes and is the seat of villous growths and osseous deposits. The bones are not proved to be friable, as in tabes.

Regarding the pathogenesis, some writers consider the arthropathies due to trophic disturbance, since they occur with acromegaly (Karg, Charcot,[30-34, 46, 47]) and with hydrorrhachis and spina bifida.[48 49]

12. *Diagnosis.*—Joint affections in the upper extremities pursuing a chronic course without inflammatory manifestations, producing spontaneous dislocations, speak for gliomatous arthropathy, especially when there is joint deformity, a disproportion between the change of form and any inflammatory symptoms (should any exist), flail joint, crepitation and relative or complete painlessness.

A cutaneous dystrophy, scars of burns, vestiges of pararitia, muscular atrophy in peripheral parts of the upper extremities, "disassociated" anesthesia, especially thermoanesthesia, speak for syringomyelia.

13. *Treatment.*—Resection and immobilization have been practiced. Drainage for adventitious secondary infection is sometimes indicated. The therapy in other directions is that of the disease itself, expectant and symptomatic.

2818 Indiana Avenue, Chicago.

BIBLIOGRAPHY.

References 1 to 28 inclusive relate to cases of gliomatous arthropathy reported; 29 to 49 inclusive to references on same subject.

1 Blasius: Beiträge zur prakishen Chirurgie, 1848, S. 64.
2 Steudener: Beiträge zur pathologie der Lepramutilans, Erlangen, 1867, S. 57.
3 Langlaus: Deut. Arch. f. Klin. Med., Bd. xliii.
4 Remak: Virch. Arch., Bd. lxiv.
5-7 Czerny: Verhandl. der Deut. Gesellsch. f. Chirurgie, 1886.
8-13 Morvan: Gazette hebdomadaire, 1887, No. xxxiv.
14 Prouff: Gazette hebdomadaire, 1887, p. 249.
15, 16 Karg: Langenbeck's Arch., Bd. xli.
17 Roth: Zur diagnostik der Gliomatose d. Rückermarkes, 1890.
18 Blocq: Comptes rendus de la Société Anatomique, 1887, p. 83.
19 Schulze: Virchow's Archiv, 87 Band.
20 Bernhardt: Berliner Klin. Wochenschrift, 1884, No. 4.
21 Sokoloff: Deutsche Zeitsch. für Chirurgie, Bd. xxxiv.
22 Sokoloff: Deutsche Zeitsch. für Chirurgie.
23 Sokoloff: Deutsche Zeitschrift für Chirurgie.
24 Kredel: 19 Congress d. Deut. Chirurgie.
25 Fereol: Gazette de hopitaux, 1885, p. 644.
26 Rotter: Loc cit.
27 Klemm: Ueber arthritis deformans bei Tabes u. Syringomyelia, Deut. Zeit. f. Chir., Bd. xxxix, 3 u. 4 heft, S. 281.
28 Graf: Beiträge zur Klin. Chirurgie, Bd. x, heft 3.
29 Manvedel: Prager Med. Woch., 1890, No. 46.
30 Archiv de physiologie, 1868-9, 1874; Archiv de neurologie, 1883.
31 Nouvement Médical, 1870, 1873.
32 Gaz. des Hopiteaux, 1870, 1880-1881.
33 Progrès Médical 1883, 1891.
34 Bulletin de la Societé anatomique, 1875.
35 Sonnenburg: Verhandl. d. Deut. Gesellsch. f. Chirurgie, xvi Congress, S. 22.
38 v. Volkmann: Berl. Klin. Woch., 1886.
37 Krauss: Berl. Klin Woch., 1887.
38 Thiersch: xix Congress-Verhandl. d. Deut. Gesellsch. f. Chirur., 1890, S. 60.
39 Sokoloff: Neurolog. Centralbl., 1893, No. 3.
40 Charcot: Progrès Médical, April 29, 1893.
41 Nissen: Gelenkerkrank. bei Syringomyelia. Arch. f. Chirurgie, H. 1-204, Bd. 45.
42 Hallion: Des déviations vertébrales neuropathique, These de Paris, 1892.
43 Barnhardt: Centralbl. f. Nervenheilk, 1889.
44 Broca: Gaz. hebdomadaire, 1885.
45 Morvan: Ibidem.
46 Riesz, Ruge, Virchow, Bruns: Berliner Klin. Woch., 1882, S. 164.
47 Charcot et Brissaud: Clin. de mal. du Syst. nerveux, xi, 359.
48 Holschevlkoff: u. Recklinghausen, Virch. Arch., 1890.
49 Z. Pagenstecher: Zeitsch. f. Klin. Med., Bd. xxii.
50 Gowers: Diseases of Nervous System.
51 Charcot: Traité de Med., vol. vi, p. 467, article by Guinon.
52 Raichline: Contribution a l'étude Clinique de la Syringomyelie avec manifest bulbaires, Thesé de Paris, 1892.

DR. HUGH T. PATRICK showed some microscopic preparations from cases of syringomyelia. With regard to these preparations, Dr. Patrick made the following remarks: I have set up for your inspection about twenty slides, taken from five different cases of syringomyelia, and I have selected those which seem to illustrate the various conditions found in this disease. The specimens speak for themselves, and I wish to mention only one or two points in connection with the pathology. The first point which the specimens illustrate very well is that in the great majority of cases the process does not originate, as is generally supposed, in the central canal. You will see in many of these specimens directly in front of an enormous syringomyelic cavity, the central canal perfectly normal, or simply distorted by the pressure and displacing influence of the pathologic process. In one slide it can be seen that this syringomyelic cavity has at last invaded the central canal, and the anterior part of the cavity is lined with perfectly normal epithelium which belongs to the central canal, but has taken no part whatever in the pathologic process (in the cavity formation).

The origin in these cases seems to be in the embryonal tissues which lie just posterior to the central canal and which constitute the remains of the fissure made by the closing up of the spinal groove.

Another point which the sections well illustrate is, that the various and seemingly anomalous symptoms of syringomyelia are dependent upon the varying location and size of the central spinal lesion. It will be seen that in some instances the cavity invades particularly one, sometimes both anterior horns, is sometimes almost completely limited to the exact center of the cord, and in one case affects one posterior horn exclusively. In some instances again, the cavity has extended into the lateral columns; in some cases there is descending degeneration of the pyramidal tracts, and in others not. The process is generally supposed to consist of a gliosis of the cord, but in some cases it is scarcely to be distinguished from a diffuse gliomatosis. Two of the sections show this excellently well, and it is astonishing to what a degree the entire cord has been infiltrated and the normal tissue destroyed. In this case, too, the process has invaded the membranes, which are enormously thickened. Clinically, this case passed for many years as one of hysteria. One section, the one in which one posterior horn alone is affected, shows the rare condition of syringomyelia limited to the lumbar region.

I also show you sections of hydromyelus and of syphilis of the cord, either of which may closely simulate the condition of syringomyelia. I would call your attention, too, to the sections showing an artificial post-mortem cavity in one anterior horn which so closely resembles syringomyelia that the sections were demonstrated as such by a neurologist of international reputation.

DISCUSSION.

THE PRESIDENT—Just a word in reference to the joint trouble or deformity in these cases of syringomyelia. The most recent studies I have found on the subject of joint diseases in connection with gliosis and tabes are published in the *Deutsche Zeitschrift fur Chirurgie* by Klemm, and his conclusions are that these arthrodes found in these two diseases are of the same nature pathologically and anatomically as those which we find in arthritis deformans. He finds no difference at all. Probably, etiologically, great differences will be found when further investigations have been made on the subject.

DR. SANGER BROWN—I would like to ask Dr. Edwards if suspension or extension has been tried in order to reduce the deformity of the neck?

DR. EDWARDS—The patient has never been suspended.

DR. BROWN—You do not know how far it might be reduced if suspension or extension was tried.

DR. EDWARDS—So far as manual strength goes, you can not make much difference.

DR. BROWN—I feel thankful to Dr. Edwards and Dr. Patrick for allowing me to see the case and specimens. I had

the privilege of seeing the case before in the Cook County Hospital. But I think it is a rare treat to see such a large number and variety of specimens of this rare form of disease, and so far as the specimens go, they leave nothing to be desired. If we had been able to have a history of each case it would simply have been a lesson in the practical physiology of the spinal cord, and I may say, that a lesson in the practical physiology of the spinal cord is not so clear and definite as it was two or three years ago; that is to say, recent and more careful experiments upon the lower animals have demonstrated that the views established in reference to the sensory functions of the spinal cord are not as we have been taught for the last ten or fifteen years. It has been ascertained that some of the degenerations which have formerly been regarded as dangerous in the sensory tracts were the result of clumsy and careless operations, and enough has been determined to show that our ideas hitherto held in regard to the spinal cord were not altogether sound. Enough advancement has not been made to warrant us in stating at the present time just what changes we will have to make in our physiology. But, as has already been stated, and as explained from these excellent sections, the symptoms of syringomyelia are extremely various. I asked Dr. Edwards a question in reference to the deformity of the neck in his patient, simply because it occurred to me that it is quite possible that the deformity in that case was caused by a lesion affecting the muscles which support the head, and as many of these muscles are rather deeply situated and might atrophy to a considerable extent without the atrophy being very appreciable to external observation, it occurred to me that the deformity might be due largely to such atrophy. I can not conceive how any deformity having occurred in that situation at the outset could produce the symptoms, because the pathologic process, whatever it might be, would have to be external to the cord, and the first symptoms would have been those of compression if the disease had begun there, and it is incredible to suppose that the disease began in the cord and spread to these parts. I think, to assume that the deformity in the bones of the neck were trophic is hardly feasible, inasmuch as, if they are due to trophic changes, these are the only ones. In syringomyelia several types have been readily recognized and marked out, that is, a type without any material trophic manifestations, and a type in which trophic manifestations are strongly marked. The latter is the type in which we have the trophic changes within the fingers, especially in the nails of both the hands and feet, and all the symptoms taking place in the bones. Cases are recorded in which enlargement of the bones of the hands and of the tissues of the hands have occurred which were similar to and suggestive of acromegaly, but they probably were not the same disease.

Dr. Patrick spoke of the pathologic lesion as being invariably a gliosis, and I believe that in most of the cases undoubtedly the condition was a gliosis; but when this matter was up for discussion, if I remember rightly, at the last International Medical Congress, held at Rome, a case was reported there in which the pathologic findings were those of leprosy, that is the bacillus of leprosy was found in the cord, there being a proliferation of tissue about the bacillus which constituted the pathologic lesion, and in the discussion it was generally conceded that syringomyelia was not at all synonymous pathologically with gliosis. Any pathologic process of a progressive nature which involves and destroys these tissues in the central part of the cord will produce the symptoms, and contrary to what had hitherto been supposed, there are cases in which the leprosy bacillus is found as a cause of the pathologic process. The symptoms of syringomyelia and those of leprosy have been placed side by side on account of the peculiar anesthesiæ, and the diseases have been thought of in the same connection. Dr. Patrick drew our attention to the fact that the disease does not begin, as we were formerly taught, in the central canal but outside of it, in the epithelial structures, of which the central canal is composed. In the process of closure, portions of these structures are pinched off on each side and are placed in the posterior horns.

Dr. Harold N. Moyer—I feel there is an apology due the society for not presenting my case of anesthetic leprosy to-right. I had a man looking for the patient this afternoon, and could not get him. He objected to being exhibited and has grave suspicions of his trouble.

I can not help referring to a few interesting analogies between the case referred to by Dr. Edwards and my case of leprosy. The young man first came to the clinic at Rush Medical College, for nervous diseases, and I demonstrated his case as one of syringomyelia. In a subsequent conversation with Dr. Patrick, he suggested leprosy to me. The young man returned and I again discussed the analogy between these two affections, but neglected to ask the young man where he lived, or where he was born, but after he left the college and was walking down the street he informed me that he was born in Australia, and when 4 years of age he was taken to the Sandwich Islands and lived there a year. Of course, that made the probable exposure to leprosy imminent.

Regarding the symptoms, they are almost identical with the case which you have seen demonstrated to-night. The anesthesia, however, extending up the limbs, on one arm to near the shoulder, the other arm to just above the elbow; on both legs to the middle of the thigh. There is absolute loss of pain sense, but pressure and muscular and some degree of tactile sense remain. There is also the same claw position of the hands. The patient can not extend the fingers. There is not the regularity of anesthesia about the shoulders such as we have here; but there are irregular patches on the side of the abdomen, chest, shoulders and on the back, more or less circular in outline, presenting at their periphery slight discoloration of the skin, which is not raised, and the cuticle is not abraded in any way. We simply note in the area surrounding the anesthetic patches that the cuticle is somewhat darkened. In the anesthetic portions, the skin is lighter than normal, and the anesthesia in these patches presents the same characteristics as that upon the extremities, namely, loss of temperature and pain sense; but the tactile, muscular and pressure sense is retained, although impaired.

There is the same increase in the reflexes which we have here. Aside from these symptoms, I think there are no differences to be noted. The relation between the two diseases, as pointed out at the International Medical Congress, may throw additional light upon this subject. It is an interesting fact that most cases of syringomyelia have been reported by French writers, and they have largely come from certain sections of France in which leprosy was exceedingly rife during the Middle Ages.

Dr. Hugh T. Patrick—The deformities that occur in syringomyelia, especially in the type of Morvan, bring up the interesting question regarding the relation of syringomyelia to Morvan's disease. I suppose most of the members know that twenty cases of Morvan's disease were described in a territory with a population of only 50,000. One of the arguments used by those who would separate it from syringomyelia was that an equal number of cases of syringomyelia had not been found, representing an equal population; in other words, that syringomyelia is much more rare. This argument and one or two others of minor importance are about the only ones which still seem to indicate the difference of these two diseases. Post-mortem examinations point to their being the same disease. I have seen two cases described as Morvan's disease, and I have photographs of such a case which I believe must be syringomyelia. The case was seen some years ago by Dr. Church and myself. He had the photographs taken and I am indebted to him for them. At that time, we discussed the question whether it was a case of Morvan's disease, or whether it could not be regarded as one of syringomyelia. Dr. Moyer in the discussion at that time said that an autopsy had recently been made in which the lesions of syringomyelia and Morvan's disease had been found, and that it was therefore, without doubt, the same disease. This case manifested trophic trouble in the hands and scoliosis. That leads to the question upon which Dr. Brown has spoken, namely, that there may be different types of this disease, and that the different locations of the lesion will generally account for the difference in symptoms. The trophic troubles begin sometimes in the soft parts, sometimes in the skin and muscles, and at other times in the bones. They may begin in the upper or lower extremities. The process usually starts in the cervical enlargement, so that the upper extremity is first invaded. A case is reported in which it began in the lumbar region. The trophic disturbance began in the toes in one case and it simulated tabes. Cases are reported also where post-mortem examination has shown a combination of syringomyelia and tabes. Then again, the location of the process determines the area in which the symptoms appear. Sometimes the analgesia is first to appear. Generally there is no anesthesia, but there may be. Sometimes the trophic trouble begins in the soft parts, and then again in the bones; sometimes the soft parts are not involved at all, and the same may be said of the bones. It depends a good deal upon the location of the lesion.

With regard to those cases in which the bacillus of leprosy was found, I do not lend any support to that view. There are only two men of note who support it, and the evidence is not sufficient from their contributions on the subject.

As to whether syringomyelia in different cases may not be really a different disease, a gliosis, a central myelitis, or something else, I think such a view should be discountenanced at the present time. In the majority of cases it has been shown to be a gliosis, and the symptom-complex is sufficiently well known to form a distinct type of disease and the name should be limited to such. Of course, the same symptoms may be produced by central myelitis. I have seen one case in which an injury was followed by a central hemorrhage in the cord. The case progressed slowly. What the process was in that case I do not know. I do not imagine in that case that there was gliosis at all. It was wrongly called a case of syringomyelia. A central tumor of the cord may cause the same symptoms as syringomyelia. The tumor may be softened secondarily in the center, make a cavity, but I do not think it should be called syringomyelia. I have seen cases of acute central myelitis with interference with pain sense with all the symptoms of acute syringomyelia, such a diagnosis being made post-mortem. A few months ago Cantaninni, an Italian, published some cases which show the disease to be family in type. A mother and three children were all affected with syringomyelia, and one of the conclusions that he draws is that in all cases of syringomyelia it is only a matter of location. I do not think that is the proper and logical view to be adopted at the present time; that whenever the disease process is located in the central part of the cord, prodncing the symptoms of the disease, therefore it should be called that disease. I do not think that is the proper thing to do, because the process is now sufficiently well known. Other diseases produce the same symptoms as typhoid fever, but we do not call them typhoid fever.

With regard to leprosy, in a given case of this disease it may be difficult to distinguish it positively from a case of syringomyelia, but such a difficulty is rare. In most cases the diagnosis can be made without an examination for the leprous bacillus. In the first place, the trophic trouble in leprosy affects by preference the skin, and the subcutaneous tissues, the muscles secondarily, and the bones the last of all. When the phalanges are affected, they are not affected in the same wayas in syringomyelia. In the latter disease if the phalanges are affected, as the thumb, there is suppuration and necrosis with casting off of bone. The patients many times pull out pieces of necrosed bone. In leprosy there is a great deal of atrophy without suppuration. In syringomyelia there are frequently secretory and vasomotor disturbances. The function of the secretory glands may be affected. That is rare in leprosy. The skin trouble which is present in leprosy is rare in syringomyelia. There are pustules in the latter disease, but no skin eruption. The only skin eruption so-called in syringomyelia is a spurious urticaria from scratching caused by irritation. In syringomyelia, we frequently have symptoms referable to the eye muscles, or a reflex action of the iris, or some nervous affection of the eyes. There is a difference in the pupils; one pupil does not react to light as well as the other. These things do not occur in leprosy. In the latter disease we have only a superficial trouble of the eye, which does not occur in syringomyelia. Furthermore, the anesthesia in leprosy differs from that of syringomyelia. In the former disease the anesthesia is due to a multiple neuritis and it affects most intensely the periphery of the extremity and gradually approaches the trunk; in other words, the multiple neuritis, as Dr. Moyer said, is along the lower extremities and extends from the feet up to the middle of the thigh. That is not apt to occur in syringomyelia. In syringomyelia, the anesthesia corresponds to the spinal segment. If in the cervical region, it corresponds to the distribution conforming to it. The anesthesia of which Dr. Moyer speaks does occur in syringomyelia, but it is very rare. These are the principal points in the differential diagnosis between the two diseases. Ordinarily the difficulty is not very great.

(To be continued.)

SELECTIONS.

Cultivation of the Gonococcus of Neisser.—Redner lately exhibited a series of twenty-four hour gonococci cultures from acute and chronic gonorrhea. The culture medium contained 3½ per cent. agar, 5 per cent. peptone, 2 per cent. glycerin, 5 per cent. common salt. Reaction neutral. The gonococci thrive well in this, and the excessive growth often seen seldom occurs. He called attention to the sensitiveness of the gonococcus to fluctuations of temperature. In his mind, the varying opinions of writers with regard to the applicability of Gram's method of staining to the gonococcus is due to the use of solutions of different strength, also to variations in the length of the staining and decolorizing processes. Others beside Redner have noticed that if the gonococcus is overstained by standing several minutes in the concentrated anilin-water-gentian-violet solution, fifteen seconds in alcohol will decolorize, while all other diplococci, after overstaining, retain their color longer. For contrast staining it is recommended to use very weak solutions; for instance, 3 drops of concentrated alkalin solution of fuchsin to 30 to 40 c.c. of water, applied for forty-five seconds. Lewin has often cultivated the gonococcus on urine agar very successfully. Varying results may depend upon the reaction of the urine. Good cultures were also obtained with urine containing sandal-wood, so that the efficacy of sandal-wood against gonorrhea appears very doubtful.—*Wiener klinische Rundschau*, July 14, 1895.

Mechanical Treatment of Pleurisy in St. Petersburg.—The movements, according to the directions of Ling and Hartelius, consist in quick elevation of the thorax of the sitting patient, twisting and bending of the trunk in various directions, with changing positions of the arms and fixation of the extremities. In order to work upon the side containing the effusion, for instance the left, the movements are directed chiefly to the right, in such a way that inspiration occurs at a moment when the left side is most favorably situated to admit the air. For respiratory exercises, the patient is placed on a sofa on the sound side, with a rather firm pillow; the corresponding hand remains under the pillow, the legs slightly flexed to relax the abdominal muscles, the head somewhat backward. The arm of the affected side is raised up and back as far as possible. In this way the sound side is in the position of expiration, pressed upon the pillow by the weight of the body, and its movements are lessened, while the affected side is in a favorable position for respiration. The position of the head and arms contributes to the elevation of the ribs and so affords the auxiliary muscles of respiration the possibility of developing greater power. The patient remains in this position some time, while he takes 16–20 inspirations a minute with closed mouth. Meanwhile the physician massages the intercostal muscles.—*Therapeutische Wochenschrift*, July 21, 1895.

Union by First Intention in Nerves.—Gluck presented before the Berlin Medical Society the case of a child of a year and a half, operated on May 7, 1895, for extensive tuberculosis in the right radius. In the operation the radial nerve was severed. After careful disinfection the nerve was sutured and then the external wound closed. Primary union of the wound resulted. After fourteen days, the first symptoms of restoration of the nerve were shown and after about four weeks the functions of the muscles supplied by the radial nerve became normal. This is the first instance of primary union in human nerves. Experimental investigations on animals show that after such nerve suturing a portion of the nerve filaments retain their vitality.—*Deutsche Medicinische Wochenschrift*. July 4, 1895.

Pernicious Anemia.—At the Berlin Medical Society, Senator recently exhibited a microscopic blood preparation from a case of pernicious anemia, which showed very clearly those peculiar reddish corpuscles, possessing amœboid movements, which Perels denoted as characteristic of pernicious anemia. Senator also found them frequently in similar cases, yet he regards it as doubtful whether they are characteristic, since he observed them in one case which could not be so diagnosed.—*Wiener klinische Rundschau*, July 14, 1895.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:
PER ANNUM, IN ADVANCE $5.00
SINGLE COPIES. . . . . 10 CENTS.
Subscriptions may begin at any time and be sent to

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 86 FIFTH AVENUE, CHICAGO, ILLINOIS.
W. H. LOWDERMILK & CO., WASHINGTON AGENT.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, Venetian Building, Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 86 Fifth Avenue, Chicago.

SATURDAY, OCTOBER 5, 1895.

LOUIS PASTEUR.

And the King said unto his servants, "Know ye not that there is a Prince and a great man fallen this day in Israel?"

LOUIS PASTEUR, the distinguished chemist, who has contributed so largely to the scientific standing of the French Academy, died of paralysis at his home in Paris September 28, in his seventy-third year.

For a period of half a century his researches and achievements have commanded the attention of the scientific world and his death will be viewed not as a loss to France alone, but as a universal calamity. His career is characterized by indomitable energy, and his successes have been due to his earnest application and strict adherence to a single line of research, easily traced from his first discovery, that relating to crystallography, to those of later days. LOUIS PASTEUR, like most scientists, was often assailed by unbelievers, but guided by mathematical precision and armed with the arguments supplied by careful research, he lived to see his important theories accepted by those who were formerly most active in their denunciation. So invincible did his theories prove that his colleagues became somewhat chary of taking exception to his statements, and on one occasion it is said that when a member of the Faculte de Medecine announced his intention of proving the fallacy of one of his arguments, a member of the Academy of Sciences called him aside, saying: "*Beware!* PASTEUR *is always right.*"

His discoveries were those of great principles, and hosts of scientific workers were given their cue by some general principle enunciated by him, which when followed into its legitimate ramifications, seemed almost to become a new creation. Thus TYNDALL followed, when he demonstrated the aerial currents of bacteria. Thus LISTER followed, when he formulated the antiseptic plans of wound treatment, and others have walked in the rays of the same radiant light when they went a step beyond LISTER, and created *aseptic* surgery.

The industry, the modesty, the perseverance, and scarcely less the intense patriotism of this wonderful man, must commend his memory to posterity, by whom he will be appreciated for these characteristics almost as much as for his science.

The editor of this JOURNAL, as he writes, recalls the appearance of PASTEUR as he appeared in 1890 in his laboratory, in the famous Institute erected during his lifetime as a perpetual monument to his greatness.

A man of delicate frame, advanced in years, wearing a skull cap, with well cut gray beard, plainly dressed and modest in his demeanor. A thoroughly pre-occupied student, was our thought, as we approached him. In the pleasant interview which followed, PASTEUR was informed that the first steamer built by the United States Government for the Quarantine Service was named the "LOUIS PASTEUR." He simply expressed his thanks and bowed politely. Continuing the conversation, he was told that the second steamer for the United States Quarantine Service was named the "ROBERT KOCH." He became animated and said with much fervor: "*C'est bien fait.*" He evidently had great admiration for his German contemporary; there was not a tinge of jealousy. "May I ask," said PASTEUR, "what names you have chosen for the remainder of your quarantine fleet, as I understand from you that there are three more contemplated?" "We shall honor our own countrymen next," he was told. "The third and fourth vessels will be named respectively the WILLIAM H. WELCH and the GEORGE M. STERNBERG; the fifth is not yet named." "Again, well done," said PASTEUR, with interest.

A hurried walk with the savant and a friend through the laboratory and the museum ended this visit which, to the editor, will always be a fragrant memory and one of the pleasurable events of a lifetime.

LOUIS PASTEUR was born in the Department of Jura, Dec. 22, 1822. His early education was received in the College of Arbois, from whence he entered Bensançon where he received the degree of *bachelier ès lettres*, and was appointed tutor in the same college. In the intervals of his duties he followed the course of mathematics necessary to prepare him for the scientific examinations at the École Normale. In October, 1843, he entered the institution, passing fourth on the list of candidates for admission, and received his doctor's degree in 1847. He taught the physical sciences at Dijon from 1848 to 1849, and chemistry at Strasbourg until 1854. In 1857 he returned to Paris and took charge of scientific instruc-

tion in the École Normale, where he remained until 1863, at which time he became professor of geology, physics and chemistry in the School of Fine Arts. He was appointed professor of chemistry at the Sorbonne in 1867 and remained in that position until 1875. In 1868 he was retired with a pension. From 1886 most of his work was at the Pasteur Institute.

His first triumph was in crystallography when he discovered the "left-handed" tartaric acid and the constitution of paratartaric acid. For his researches on the relations of the polarization of light to hemihedrals in crystal he received the Rumford medal from the Royal Society of London. His next achievement was the theory of fermentation and was followed by a series of studies on the manufacture of vinegar and studies on wine. In 1865, at the request of the civil authorities, he directed his investigations to the diseases of silk worms, which were ruining that great industry in France. For three years he was actively engaged in the study of this disease, and when he had arrived at a solution of the problem, which was to the effect that all unhealthy moths should be rejected and destroyed in order to prevent infection, he was stricken with paralysis, from which he never fully recovered. In 1860 he exploded the theory of spontaneous generation at the Academy of Sciences. He next took up the problem of splenic fever, from which he passed to fowl cholera, at the same time directing his attention to JENNER's discovery of vaccination. He communicated to the Academy of Sciences the important facts that sheep and cows vaccinated with the attenuated bacilli were protected from subsequent inoculation with virulent virus.

Of these remarkable discoveries PASTEUR said: "I have lent to the expression vaccination, an extension that I hope science will consecrate as a homage to the merit and immense services rendered to humanity by one of the greatest men of England—JENNER."

His next great work was on hydrophobia, and his first case was upon a boy named JOHN MEISTER. His theories on this subject have continued to gain credence and are now accepted by the majority of scientists. His discoveries in relation to chicken cholera clearly forestalled the antitoxin hypotheses in treatment.

In 1887 the Institute Pasteur was built by public subscription and the average number of inoculations has been nearly one hundred a day.

In 1892 the municipal council of Dôle placed a commemorative tablet over the door of the house in which he was born.

ON THE INFECTIVITY OF THE URINE IN TYPHOID FEVER.

Two professors of the British Army Medical School at Netley make a joint contribution to the London *Lancet* touching the important rôle played by the typhoid bacillus in the urine of patients suffering from typhoid fever. Their names and positions are A. E. WRIGHT, professor of pathology, and D. SEMPLE, Surgeon-Major, assistant to professor of pathology.

Their examinations for the article in question were seven in number, the most approved methods of bacterial investigation being employed by them. In six of the cases the bacillus was readily detected in the urine; and this fact, they claim, should bring into greater prominence the diagnostic value of bacterial work in doubtful cases of fever. The writers are free to admit that the presence of typhoid bacilli in the urine is not a new fact. It has heretofore been pointed out by SANERELLI, working under the auspices of METSCHNIKOFF, and by them made the basis of a new theory, namely, the theory of blood infection in contradistinction to the intestinal intoxication process theory, which is the one that is now generally worked under by the profession. Their line of argument begins with the parity of pathologic processes that takes into consideration the conditions of organs remote from the intestinal tract, in the case of this fever, as compared with certain other febrile diseases. One of the phenomena first to be explained, they assert, is turgidity of the spleen and the presence of typhoid bacilli in the splenic tissue.

"Now, this turgidity of the spleen and this presence of microörganisms in the splenic tissue is an invariable accompaniment of every septicemic process. We find it in the case of such blood infections as anthrax in cattle and spirillum fever and malaria in man. And we have the explanation of this phenomenon in the experiments of WERIGO, which show that the introduction of any foreign particulate matter into the blood invariably results in a deposition of that particulate matter in the spleen (and other internal organs), and in an aggregation of polynuclear white blood corpuscles round the foreign particulate matter, and finally, in a process of phagocytosis. Everybody who has a rabbit, and a little carmine, or any bacterial culture at his disposal, can readily verify these facts for himself. The enlarged spleen and the presence of bacteria there are thus quite in harmony with the theory of a blood infection in typhoid fever. The fact that the white blood corpuscles are diminished in the circulating blood in typhoid fever is also in harmony with this explanation. We have further, in connection with typhoid fever, to account for the eruption of pink spots on the skin. These were inexplicable on the intoxication theory of typhoid fever. They are, however, of the easiest explanation if we make the assumption that typhoid fever is characterized by a blood infection, for here, as in other cases, we may instance the skin eruption in the case of human glanders, the spots evidently corresponding to lodgments of the bacteria in the capillaries of the skin. This interpretation of the skin eruption in typhoid fever has been borne out in the case of typhoid, just as it has in the case of glanders, by the fact that the specific bacteria have been cultivated from the spots."

The writers quote the findings of WATHELET in his series of investigation of the stools of typhoid patients.

His object was to answer the question as to whether, in addition to the bacillus coli communis, the true typhoid fever bacillus is not also to be found in the stools of patients suffering from typhoid fever. The following are the results of WATHELET's careful examination of this question. The true typhoid fever bacillus was detected in the stools of only four of the twelve cases of typhoid fever which were studied by this observer. In the case of these four patients the typhoid fever bacillus was detected only four times in a total of twenty-four examinations; and even on these four occasions the true typhoid fever bacillus was outnumbered by the bacillus coli communis in the proportion of about 3 to 1. In the case of the other eight cases of typhoid fever the bacillus appeared to be absent from the stools throughout the whole course of the disease. WATHELET has further shown that if the bacillus typhosus and the bacillus coli communis are implanted into one and the same tube of nutrient broth, the bacillus coli communis will outgrow and kill off the typhoid fever bacillus, even when at the outset an enormous numerical preponderance is given to the typhoid bacillus over the bacillus coli communis. Again, WATHELET has shown that whereas the bacillus coli communis will flourish in a nutrient medium containing the toxins elaborated by the typhoid fever bacillus, the typhoid fever bacillus will not grow in a nutrient medium containing the toxins elaborated by the bacillus coli communis."

The conclusions of DRS. WRIGHT and SEMPLE may be summarized under four principal heads namely:

"1. It is true that the typhoid bacilli are present in the urine of patients suffering from typhoid fever, and if, as we shall see typhoid bacilli are generally absent from the feces, it will be evident that it is the urine, and not the feces, of patients suffering from typhoid fever which is responsible for the spread of typhoid infection.

"2. If typhoid bacilli are constantly present in the urine of typhoid patients, it may be possible to diagnose the presence or absence of typhoid fever by undertaking a bacteriologic examination of the urine.

"3. If it is true that typhoid bacilli are constantly present in the urine in cases of typhoid fever while they are generally absent from the feces, it will be evident that the conception of typhoid fever upon which the ordinary clinician proceeds is an entirely erroneous one.

"4. The working hypothesis regarding this fever, in the minds of medical men generally, favoring, as it does, the notion that this fever is an intestinal intoxication process should be revised, and substituted for it, one that will have regard to the wide range of pathologic appearances, some of which at least fit in well with a hypothesis of blood infection, such as malarial fever in man and anthrax in cattle."

The importance of thoroughly disinfecting the urine of typhoid patients rather than the feces is insisted upon, as the great hygienic lesson to be learned in this view of the case. They say:

"We thus see that in six out of seven cases examined, the typhoid fever bacilli were easily detected in the urine. In view of this fact it seems to us that the bacteriologic examination of the urine ought not to be neglected in any doubtful case in which typhoid fever is suspected. It is hardly necessary to do more than merely advert to the hygienic aspect of the matter. It was only a natural outcome of the intestinal intoxication theory of typhoid fever that the greatest precaution should have been enjoined with regard to the stools of the patient suffering from typhoid fever while the disinfection of his urine was neglected. If, however, the recent observations on the almost constant absence of typhoid fever bacilli from the stools are to be trusted, the disinfection of the feces will have to rank not as an article of faith, but as a mere "counsel of perfection." On the other hand, the most careful attention will have to be given to the disinfection of the urine. In some cases the urine even before incubation is absolutely turbid with typhoid bacilli."

CONCERNING GALL-STONES.

Gall-stones are a rather common phenomenon in the daily work of a physician with a large practice. In fact, they are so common as to lull the vigilance of the unwary practitioner, and these notes are for the purpose of directing attention to some of the curious conditions connected with their presence, and to show that they are often an unmixed evil. To begin, then, with their frequency: It is commonly stated that from 4 to 12 per cent. of individuals are affected with gall-stones. This figure has been copied for many years and is probably too high. PAULSEN, of Copenhagen, has recently published statistics showing that in Denmark this per cent. is decidedly too high. During the period 1870–1890, only 111 cases—30 men, 81 women—of cholelithiasis were treated in the Communal Hospital of Copenhagen. During these years 9,172 necropsies were performed, and calculi were found in but 3.78 per cent.

Mankind enjoys no monopoly of these concretions, for they are found in most vertebrates, especially in stall-fed oxen, and in mollusks and insects among the invertebrates. As regards number, they may range from one up to hundreds and even thousands—7,802 seems to be the high-water mark thus far.

The size of gall-stones ranges from mere detritus—*sable*, as they say in French—up to masses of several square inches. It is given to but few persons to harbor a concretion measuring four and a half by two and a half inches, yet such a stone was recently removed from an old woman in England who otherwise was not at all remarkable. Fresh calculi are always heavier than water and only float after becoming dry; hence, in washing fresh feces to discover them, they will be found at the bottom and not at the top of the vessel. It may be noted that GERHARDT asserts lately that physical diagnosis of biliary calculi can be made, even before any pain is present, by this palpable tumor which disappears when the stone passes into the bowel. The

walls of the gall-bladder quickly fall together and a slight rubbing can be felt; the colic ends with this sign, but the pain does not always end. Sometimes a diastolic rubbing sound is heard in the region of the gall-bladder which disappears with the ending of the attack, and this author states that in a prolonged attack a friction sound remains which can be heard with the stethoscope or even felt. PETIT, one of the early French surgeons—he of the triangle fame—long ago likened the audible presence of calculi in the gall-bladder, which can sometimes be heard, to nuts rattling in a bag.

Calculi invariably form in the gall-bladder or the bile passages and well-behaved specimens stay in the bladder or leave through the bile ducts. In cases of innate depravity, however, these concretions will pursue a most circuitous and bizarre course. They may ulcerate through the biliary passages, usually by passing directly through the ductus communis into the bowel, or indirectly by a fistulous passage either into the adjoining bowel or through the intégument. Having escaped through the biliary passages, calculi may appear in the stomach; one weighing sixty-five grams was thus ejected; from a fistula at the umbilicus a stone one and a half by three-fourth inches escaped; from another thirty calculi were discharged. They may become encysted in peritoneal adhesions and may pass from the urethra or from a fistula between the bile ducts and the kidney. In one remarkable case, 200 calculi were passed from the urethra in one week. They were analyzed and found to be biliary and not urinary in character. Very large calculi occlude the gut, giving rise to serious or fatal obstruction; of course, this necessitates a large-sized stone and, these are fortunately rare. LEICHTENSTERN, in a total of 1,152 intestinal obstructions from various causes, gives only 41 as due to gall-stones.

Lastly, a hint as to treatment. As already stated, calculi are very common in stall-fed oxen and disappear when these are turned out in spring to grass. The eminent Dutch physician, VAN SWIETEN, arguing from this observation advised that patients with cholelithiasis be restricted to a diet of grass like NEBUCHADNEZZAR of old. As yet no one has taken his proposal seriously. A great deal of misapplied energy has in the last 200 years been directed toward attempts to dissolve urinary and biliary calculi *in situ*. Any one who tries to dissolve calculi in a test tube in his laboratory will be convinced of the hopeless character of the task and the uselessness of the so-called solvents. The ingestion of large quantities of olive oil is, perhaps, one of the most useful of modern internal remedies and yet it only operates through mechanical action as a lubricant. The recent marvelous advances in gall-bladder surgery render the removal of calculi of so little moment as to be almost a minor operation. The physician owes to himself and to his patient, once the diagnosis is made, to call in surgical aid and relieve the patient from the embarrassment of passing calculi through his urethra, navel or other outlandish route.

NEW MEXICO FOR CONSUMPTIVES.

The climatic treatment of pulmonary tuberculosis by physicians began when it was observed that the natives of certain regions were more or less immune from the disease, and that subjects removing there from other regions improved or recovered. The climatic conditions in these favored regions were not identical, but quite diverse; and naturally a diversity of opinion arose as to the conditions of climate most favorable to the consumptive. In this country the resorts are of two classes, in the main well marked. The first class we will call the "mild and equable," in other words, the warm and moist; of these the resorts of Carolina, Florida and Southern California may be taken as types. The second class of resorts are characterized by a dry and bracing climate, cold and elevated, as in Colorado.

Each class has its advocates; and the advocates of each in some cases go to extremes. This must be obvious to all who consider some of the arguments advanced by certain somewhat heated exponents of the cold and dry theory, and the extreme low temperatures they advise; while, on the other hand, it is a matter of common observation that the debilitating warmth of the southern seashore is indiscriminately prescribed by physicians of the opposite school.

Differing on most points, both schools agree in one opinion: that the worst climate is that which is both cold and moist. This gives us a clue to the solution of the matter in dispute—a solution which is beginning to be recognized, and, we may hope, will soon be universally recognized. It is that both disputants are right—the one in advocating dry and bracing air, the other in insisting upon mild temperature. These conditions are all met in certain parts of New Mexico, for instance, where the elevation secures a stimulating air, the latitude a mild air, and the sunshine and small rainfall a dry air. In Central New Mexico these attributes are combined in greatest perfection. Further north there is more rain and snow, less sun, occasionally intense cold, and there are sudden and violent changes in the weather at certain seasons. Further south the heat is apt to be excessive in summer; though (be it remarked in passing, as a set-off to the claims of those who urge the mid-winter Adirondack treatment) many people claim to have been cured by the summer furnace heat of such places as Tucson and Yuma.

But in Central New Mexico we have the best year round climate for out-door life in the United States. And the topography of the country is such, that the health-seeker there, if at any time dissatisfied with

local conditions, can find within a few miles, north south, east or west, anything in the way of change that he can reasonably desire.

In order to ascertain the rate or activity of combustion at different altitudes, PROFESSOR TYNDALL, during one of his Alpine outings, burned candles at the foot of the mountains, and other candles precisely similar on the summit, and noted the time required to consume similar lengths of candles at the different levels. Contrary to expectation, we may suppose, he found that the high candles burned faster than the low ones; in other words, that combustion was more rapid as the air became thinner and the amount and density of the oxygen less.

This was certainly a striking result, but beside the well-known effect of pressure, it is probably not inconsistent with the theory that the increased activity of oxidation is due to the thinning of the inert nitrogen; which in air of ordinary density may be assumed to oppose a much greater mechanical obstruction to the action of the oxygen molecules, than in the case of thin air. Moreover, we may assume that the moisture in the air mechanically obstructs the action of its oxygen, in the same way that nitrogen does; and that the oxygen of an air at once thin and dry is most fully and promptly available.

If this theory be correct, the physiologic and pathologic application becomes at once evident, and the known effects of thin and dry air in certain pathologic processes become theoretically explicable. For if we consider the physio-chemic processes in the animal organism and recall what a prominent part oxidation plays in them, and the disastrous results of incomplete oxidation, we have reason to believe that imperfect oxidation lies at the basis of most of the disorders characterized by, or caused by, products of abnormal or imperfect (generally retrograde) tissue metamorphosis. Such diseases are many forms of so-called dyspepsia, rheumatism, gout, lithemia and tuberculosis—the latter essentially so, though with a specific element ingrafted.

These disorders are notoriously benefited by thin and dry air, and the inhabitants of elevated inland plateaus are largely exempt from them. And our object in this article is to suggest that it may be worth while to inquire: 1, whether the beneficial effects of high and dry resorts may not be largely due to more perfect oxygenation of blood and tissues; and 2, whether this more perfect oxidation may not be due to diminished mechanical interference of molecules of nitrogen and aqueous vapor with the molecules of oxygen in the air of the lungs.

CHRISTIAN "SCIENCE."

The health problems connected with religious faith, which in a large way are troubling the English authorities in their Eastern possessions, seem to be likely to be in evidence here on a smaller scale, if the Christian science and faith cure craze is not soon eradicated.

The report comes from Indianapolis that the alarming spread of diphtheria in that city has been found to be largely due to the practices of "Christian scientists" who have honeycombed whole districts with their doctrines, taking in among their proselytes not only the ignorant, but the fairly educated and intelligent classes. Not only have the cases been left without proper medical treatment and unreported, but the simplest sanitary precautions are disregarded and it is the custom of the believers to rendezvous at the bedsides of the sick, and go from house to house carrying the contagion, while refusing admission to health inspectors and claiming a higher than human law to control them in their disobedience to sanitary regulations.

The "grand idol of human credulity," as MAGENDIE denominated popular medicine, has many worshipers, but there are some municipalities that deal with this craze with a heavy hand. In Memphis, recently, one of these persons who had treated a case of childbirth, and refused to allow a physician to be sent for, was promptly indicted for murder. A few more such indictments will have a healthy effect.

A VALUABLE CONTRIBUTION TO MILITARY HISTORY.

The members of the ASSOCIATION will be pleased to learn that PROF. JOSEPH JONES, of New Orleans, is engaged in the compilation of a medical history and roster of the medical department of the Confederacy, with biographical notices of its principal surgeons. The work will contain about five hundred pages and will be presented at the next session of the Confederate Veterans.

The position of PROFESSOR JONES during the Civil War, gave him ample opportunity to observe the methods and acts of the Medical Corps of the Confederate Army, and since the war he has been accumulating data bearing upon this subject. It is to be hoped that the Confederate veterans will see their way clear to publish this record, which will probably be the only complete one in existence.

The careful and painstaking work of PROFESSOR JONES, in regard to the condition of the prisoners at Andersonville military prison, as published in the memoirs of the U. S. Sanitary Commission, gives ample evidence, if any were needed, that the forthcoming book will be accurate and impartial. Few of our generation, who were identified with one or the other of the great armies, are better equipped by past training to write impartial history than PROFESSOR JONES.

Blank Applications for membership in the ASSOCIATION at the JOURNAL office. Write for them; sent free.

CORRESPONDENCE.

Library of the American Medical Association.

CHICAGO, Sept. 25, 1895.

To the Editor:—For the first time in several years, if not in its history, this library has been united and roughly sorted into periodicals, transactions, monographs and pamphlets. There are about two hundred and fifty incomplete sets of periodicals, mostly United States, with some English, French and a few German, Italian and Spanish. Some of these, mostly the older United States periodicals, have been bound in a cheap but durable style, but the greater majority are unbound. This number includes some not now received in exchange, but this deficiency is made up by new periodicals, so the number remains about the same.

By the terms of the contract, the library does not receive *all* periodicals and books sent to the JOURNAL. Some of these are kept for office copies and some become the property of the reviewers. The value of these sets is their incompleteness, as enabling the Newberry Library to fill up many of the deficiencies in its sets, particularly of the United States periodicals, a procedure which has been anticipated for some time.

There are some good things in the older United States periodicals, those now extinct. For instance, there is almost a full set of the New York *Journal of Medicine*, sometimes called *Purple's Journal*, from the name of the most prominent editor. This was in some sense the forerunner of the present *New York Medical Journal*.

There is also a set, fairly complete, of the *Medical Repository*, edited by Samuel Latham Mitchell, a distinguished New York physician and United States Senator. Started in 1797, this periodical turned the century and ran until 1824, to be practically succeeded by *Purple's Journal*, and this, later, by the present *New York Medical Journal*.

The *Philadelphia Journal of Medical and Physical Sciences* is nearly complete. This is the direct antecedent of the *American Journal of the Medical Sciences*. Strange as it may seem, the proverb of the shoemaker's child comes true in this library, for there is not a set or even a volume of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

The Canadian journals are well represented, as also are the Central and South American periodicals. These latter are valuable as an exponent of what is being done in these countries which are so near to us, and which are opening such prosperous fields for commerce.

There are also a few French and German periodicals. About one hundred and thirty societies are represented by their Transactions, and in the majority of cases these Transactions as well as the periodicals are unbound.

Nearly all of the State medical societies are here, and the various local and national societies also. There are some valuable foreign Transactions, and these, as is well known, can only be secured by exchange. With the State Transactions already in the Newberry Library, these will, in many cases, make complete sets. The AMERICAN MEDICAL ASSOCIATION heads the list with a full set of its own Transactions and the Index.

As to monographs or books, there are no especially rare or valuable works in the collection. A few old English works have drifted in, and these will be noted:

Heister, Lawrence: Medical, Chirurgical and Anatomical Observations, vol. II, London, 1755, quarto. This copy has lost both covers, and in addition the bands have been torn through. It is a raised band book, and why the vandal should have spoiled it by tearing the bands out is a mystery.

Astruc, John: Treatise of Venereal Diseases in Nine Books. London, 1754, quarto. There are two copies of this work.

Mead, Richard. Medical Works, London, quarto, 1762. Has a fine portrait of the author as a frontispiece.

Winslow, J. B.: An Anatomical Exposition of the Structure of the Human Body; 3d edition, two volumes in one, London, 1769, quarto.

There is an edition of Boerhaave in six volumes. London, 1742–1746.

Van Swieten: Commentaries on Boerhaave's Aphorisms. Eighteen volumes. 1766–1776. This has the stamp and signature of Dr. John Redman Coxe, a well-known Philadelphian, a man of note, a teacher, and editor of a dispensatory, who was born in 1773 and died in 1864.

There are two sets of works of Benjamin Rush, easily the first man in United States medicine.

There is an imperfect copy of the sixty volume, 1812–1822, Dictionnaire Encyclopedique.

The bulk of the books are those received during the last fifty years and represent all branches of science. There are comparatively few standard books among them. The pamphlets are largely reprints, but there are scores of hospital reports, health reports and college catalogues. The card catalogue and accession register, both of course imperfect and incomplete, are also here. These show that an attempt was made to carry on the library as a library.

The collection is now where it will do the most good, that is, in completing another and larger collection. It never was a library, simply a mass of unorganized matter.

Newberry Library. G. E. WIRE, M.D., Librarian.

Tuberculous Patients—a Misquotation Corrected.

ST. LOUIS, Sept. 27, 1895.

To the Editor:—In the JOURNAL of September 21 (in the report of the Society Proceedings), I am represented as having said at a discussion of the Mississippi Valley Medical Association, at Detroit, Mich., that tuberculosis patients could not live in Colorado or New Mexico; that they would be more apt to die there quicker than anywhere else. I beg to say to you that I have never made such a remark anywhere, and that your reporter must have mistaken my statement. I did say something to the following effect: "That patients suffering with acute tuberculosis do not find a Colorado or New Mexico climate favorable, and that in such altitudes acute tuberculosis runs its course more rapidly than elsewhere at low altitudes." I had in mind simply acute tuberculosis, and nothing else. Please publish this letter in a prominent place among the Society Proceedings, in order that those to whom any injustice is done by the misquotation may read it. I remain,

Very truly yours, PAUL PAQUIN, M.D.

A Correct Nomenclature.

LA FAYETTE, IND., Sept. 28, 1895.

To the Editor:—There is a growing tendency by physicians to call their practice by the name of "business." While the practice of medicine has its business side, which should be carefully guarded, it surely is not all business, except with those fellows who prostitute the practice to get out of it all the money they can, by leaving out of sight all the other attributes which characterize a good physician's practice. When a physician calls his practice "business," we naturally look for those tricks of trade which are reprehensible in the practice of medicine. Often we do not have to look far to find them either. In the name of the good system under which we were reared, let us cease to lower ourselves in the estimation of others by calling what we do "business;" but rather let it be known by the name by which it has always previously been called, "practice."

Fraternally, GEO. F. KEIPER, M.D.

BOOK NOTICES.

Fuller on Male Sexual Disorders. DISORDERS OF THE SEXUAL ORGANS IN THE MALE. By EUGENE FULLER, M.D., Instructor in Venereal and Genito-Urinary Diseases, New York Post-Graduate Medical School. In one very handsome octavo volume of 238 pages, with 25 engravings and 8 full-page plates. Cloth, $2. Philadelphia: Lea Brothers & Co., Publishers. 1895.

This book contains seven chapters, as follows: Anatomy, Physiology, Pathology, Clinical Features, Differential Diagnosis, Treatment and Prognosis, and Illustrative Instances.

In this work the author correctly says that the anatomy, which lies at the foundation of all medical science, should properly precede any discussion of a subject, and proceeding therefrom, the physiology and pathology follow in logical sequence. The book, which is a valuable one as far as it goes, seems to be devoted much more to diseases of the vesiculæ seminales than to any other affections, and, strictly speaking, its title should be sexual disturbances in the male with incidentally the anatomy, physiology and pathology of those diseases of *some* of the organs connected therewith. For specialists the book will be an instructive one, and the latest illustrations giving all the operative methods for the treatment of vesiculitis will be very interesting. The history and methods of incisions for operations on the vesiculæ seminales are given, but all those familiar with the literature of the subject, and especially with the work of Monod and Terrillon, on diseases of the testicle, published in Paris in 1889, will see that comparatively little on the general subject with the exception of the operative measures named, has been added. The diseases of the testicle are hardly mentioned in the book, and then only incidentally. We trust that should the work pass to a future addition, the author will change the name, or have it include the diseases of the testicle. As a monogram on seminal vesiculitis, it is without doubt the most comprehensive of any.

Hare's Text-Book of Practical Therapeutics. A TEXT-BOOK OF PRACTICAL THERAPEUTICS; With Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by DRS. G. E. DE SCHWEINITZ, EDWARD MARTIN and BARTON C. HIRST. New (fifth) edition, thoroughly revised. In one octavo volume of 740 pages. Cloth, $3.75; leather, $4.75. Philadelphia: Lea Brothers & Co., Publishers. 1895.

As this book has now passed to its fifth edition, it needs no special commendation on the part of the writer of this notice. The revision has brought the book down to date. Each article has been revised and the antitoxin treatment of diphtheria has been introduced. The author mentions with approval that the "gross percentage of mortality without taking favorable cases alone and including operative cases, ranges from 5 to 23 per cent. as against the ordinary mortality of about 50 per cent. The dose of the antitoxin serum is to be judged by its known strength and power, when conferring immunity, by the severity of the disease and the susceptibility of the patient. The present common dose of the antitoxin serum of Behring and Parke, Davis & Co., is 5 to 10 cubic centimeters, while that of the strongest serum is much less. One valuable feature of this book is the posologic table at the end, where doses of all the medicines are given in the metric system, as well as in the old British apothecary system.

Some of the Physiologic Factors of the Neuroses of Childhood. By B. K. RATCHFORD, M.D. 8vo., pp. 122. Cincinnati: Robert Clarke Co. 1895.

This little book is a republication of a series of papers first published in the *Archives of Pediatrics*, and for the benefit of those of our readers who have not seen that publication we give the following general synopsis of the contents: Chapter I, normal Function of Nerve Cells; II, Physiologic Peculiarities of the Nervous System of Infancy from Childhood; III, Fever and Variable Temperatures of Childhood; IV, Heat Dissipating Mechanism; V, Autogenetic and Bacterial Toxins; VI, Venous Condition of the Blood; VII, Impoverished Condition of the Blood; VIII, Reflex Irritation, and IX, Excessive Nerve Activity.

The author uses the term, "neuroses of childhood," to cover all local and general nervous disorders which do not have any known pathologic lesions of the nervous system. It is thus seen that the title of the book is more comprehensive than its style and general make-up would seem to indicate. The papers contain the result of much original research. The chapter on auto-intoxication is alone worth the price of the volume.

Charaka-Samhita. Translated into English. Published by AVINASH CHANDRA KAVIRATNA. Calcutta. 1895. Part XIII

The thirteenth fasciculus of this interesting work has reached us, and on examination we find it completes the twelve groups of food and drinks. Lesson XXVIII sets forth very quaintly the difference between men that are wise and those that are ignorant and foolish. Lesson XXIX gives some curious observations on quacks: "Bad physicians or killers of life and helpers of disease." The good physician is thus described by the illustrious Son of Atri: "Those that are well born, of clear understanding, possessed of experience, skillful, of pure behavior, possessed of mastery over their hands, with souls under thorough control, equipt with every necessary object, with every sense in order, capable of reading the disposition of others, furnished with knowledge of results (processes, operations, drugs, etc.) are said to be saviors of life and destroyers of diseases."

Black on the Urine. The URINE IN HEALTH AND DISEASE, AND URINARY ANALYSIS, PHYSIOLOGICALLY AND PATHOLOGICALLY CONSIDERED. By D. CAMPBELL BLACK, M.D., L. R. C. S., Professor of Physiology, Anderson College Medical School. In one 12mo. volume of 256 pages, with 73 engravings. Cloth, $2.75. Philadelphia: Lea Brothers & Co., Publishers. 1895.

This book is an English printed one, for the use of students. It is very condensed, concise, well illustrated, and will be found extremely useful for those who wish to have in a small compass a recent work on the science of urology. It has been carefully brought down to date and will be found a valuable book of reference on the subject. Practitioners will find it desirable to have a book handy for reference in the examination of specimens. The only defect in it, so far as our observation has extended, is that too little attention has been paid to the examination of urine for bacteria. The bacillus tuberculosis and bacillus ureæ are the only ones mentioned; and no specific directions for tests are given in the book, which we take to be a defect of omission, as in an authoritative work of this kind everything relating to the subject should be set forth.

Manual of Organic Materia Medica; BEING A GUIDE TO MATERIA MEDICA OF THE VEGETABLE AND ANIMAL KINGDOMS; for the use of Students, Druggists, Pharmacists and Physicians. By JOHN M. MAISCH, Ph.M., Ph.D., etc. Sixth edition, revised by HENRY C. C. MAISCH, Ph.G., Ph.D. 8vo., pp. 526. Philadelphia: Lea Bros. & Co. 1895.

This, as its name implies, is a manual or hand-book of materia medica, adapted to the use of medical students and students of pharmacy. The new Pharmacopœia has been adhered to, and the doses are given in metric terms. Although the matter in the present volume has been increased by slight enlargements of the pages and condensation, the bulk of the volume is not materially augmented. It will, as heretofore, without doubt, continue to be a favorite with students.

A Manual of Obstetrics. By A. F. A. KING, A.M., M.D., etc. Sixth edition, 221 illustrations, 8vo., 533 pages. Philadelphia: Lea Bros. & Co. 1895.

This is one of the most popular treatises on obstetrics that has been issued for some years, a fact which has been attested by its having passed its sixth edition. We trust, however, that in the next edition our friend will recast the chapter on inflammation of the breast, especially the section thereof which refers to the causes of mammary inflammation, in order that the bacteriology of the subject may be brought to conform to modern views. A similar criticism might, without being hypercritical, be extended to the entire Chapter XXXIV, on puerperal septicemia, septic and "non-septic" puerperal inflammations, etc.

PUBLIC HEALTH.

Smoke Abatement.—It will not be very encouraging to the authorities of the many towns and cities in this country who are striving to abate the "smoke nuisance" to read the latest utterance of Sir Douglas Galton, the eminent President of the British Association for the Advancement of Science, on the subject. It occurs in his Presidential Address, at the opening of the recent meeting of the Association on the 11th ult. After pointing out that much may be done by care in firing, by using smokeless coal and by washing the soot out of the products of combustion, he intimates that in the general use of electricity lies the only adequate remedy and that this is too costly where it must be generated by the use of coal. "I can conceive, however, that our descendants may learn so to utilize electricity that they in some future century [!] may be enabled by its means to avoid the smoke in their towns."

"Quis Custodiet Ipsos Custodes" Again.—What can be expected of the ignorant and uneducated when those who are to guard their health and cure their sickness openly violate the simplest hygienic precautions? Professor Virchow, Rector of the University of Berlin, declares that in spite of the large number of suitable receptacles for saliva, placed by his order at all convenient places in the university building, the students continue, as in the past, to defile the floors of the halls and rooms that they frequent with their expectorations. It is now suggested that a rule be adopted, imposing a penalty for each offense against this common requirement of decency and sanitation, similar to that decreed by the municipality of Sydney in New South Wales, where a fine of $5 is levied upon every person detected spitting in public buildings, vehicles or streets.

Diphtheria Antitoxin Statistics in Russia.—Dr. Zabolotnui has furnished the following figures of the results of the antitoxin treatment of diphtheria in the district of Podolia, which have been reprinted from a local journal of the district in the *Meditzinskoe Obozrienie:* In 109 cases proved bacteriologically to be true diphtheria, injections of antidiphtheritic serum were employed. The number of deaths was 14; the percentage death rate was therefore 12.8. Previously, under the old forms of treatment, the death rate had been 48 per cent. Prophylactic injections were given to 228 healthy children, stated to be members of families in which cases of diphtheria had occurred. None of these persons contracted the disease. Dr. Zabolotnui himself underwent the treatment for an attack of diphtheria, and describes graphically the rapid subjective improvement after the first injection, the disappearance of headache and of the apathetic state into which he had fallen, with corresponding rise in spirits and improvement in all the specific symptoms. The temperature fell from 39.6 C. to normal after the first injection.

Suicide in European Cities.—Recent vital statistics show the following numbers of cases of suicide per 10,000 of population: Munich, 1.93; Berlin, 2.98; Vienna, 3.2; Brussels, 3.29; Paris, 3.6; Breslau, 3.91. The Vienna correspondent of *The Lancet* furnishes some interesting data concerning suicides in that city. In every 100 cases, 77 were men and 23 women. Adolescents appear to have even more frequent recourse to this method of terminating their real or supposed miseries, the highest rate being registered at the age of 16 to 25 years. Among 100 suicides, 32.5 ended their days by hanging; 23.5 by pistol shots; 22.4 by poisoning; 5.8 by drowning. With respect to the poisons, cyanid of potassium was resorted to in 12.7 of the cases, caustic lye in 22.7, phosphorus in 26.1, and sulphuric acid in 7.2. As for seasonal distribution the proportions were: in January, 8.5 per cent.; in February, 7.6 per cent.; in March, 8.9 per cent.; in April, 9.1 per cent.; in May, 10.5 per cent.; in June, 8.7 per cent.; in July, 8.1 per cent.; in August, 7.2 per cent.; in September, 7.4 per cent.; in October, 8.3 per cent.; in November, 7.8 per cent.; and in December, 7.9 per cent.

School Diffusion of Diphtheria.—Although there was some increase of diphtheria noted throughout the country toward the close of August, the weekly mortality reports for September indicate a much greater prevalence of the disease since school has "taken up." In New York city this increase is so great that the antitoxin supply is inadequate and orders for the serum from other communities have been refused. In Chicago the number of deaths during the month has increased fully one-third over that of August. In a recent report to the London County Council, Shirley Murphy shows in a very striking manner the relation of the autumnal increase of diphtheria to the school population. Taking three periods of four weeks before vacation, the four vacation weeks and the four weeks after vacation, he finds a remarkable reduction in the vacation period from the ante-vacation period, followed by a still more remarkable increase in the post-vacation period. In 1892 this reduction was 3 per cent. and in 1893 it was 27 per cent. The increase in 1892 was 29 cent. and in 1893 it was 81 per cent. It is to be especially noted that there is no such constant and marked relation discoverable in other age periods, but that it is confined to children of the elementary school age—in that country between 3 and 13 years. There is, of course, some decrease and some increase at other ages, but this may be fairly attributed to lesser or greater infection derived from and secondary to the school cases.

Returns of Sanitation.—At the recent meeting of the Sanitary Association of Scotland held in Greenock, the medical officer of health of that town presented some statistics which speak eloquently of the value of sanitation and of the returns from sanitary expenditure. Prior to 1860 the town had been repeatedly scourged by outbreaks of the contagious and infectious diseases—the death rate for the twelve years 1843–1854 inclusive being 35.5 per 1000 of population, rising to 61.3 in 1847 and to 64.2 in 1849. The cholera epidemic of this latter year caused an inspector to be sent to the town by the General Board of Health in London, who pointed out glaring defects in the main drainage and other matters. This was followed by radical improvements of the health administration; further pollution of the harbor was remedied by the construction of a complete system of main sewers; the water supply was improved at a cost of nearly two million dollars; another million was expended in alterations under the Artizan Dwellings Act; numbers of dilapidated dwellings were destroyed, new streets were opened, letting in sun and air, and sanitary reforms were carried out in other directions. The increased working force of the population, its saving of doctors' bills, medicines, nursing, wasted time, suffering, funeral expenses, etc., may be inferred from the following

figures: from 1865 to 1869 the death rate was 32.46 per 1000 of population: from 1870 to 1874 it was 29; from 1875 to 1879 it was 23.09; from 1880 to 1884 it was 22.13; from 1885 to 1889 it was 18.28. What is true of Greenock is true of every other place where systematic, organized sanitary effort is made. As Professor Hay said during the Congress: "With a rapidly growing knowledge of the laws of health, derived from extended experience and the laborious observations and investigations of many workers, in recent years we have been making a freer and more intelligent use of the powers conferred by the Legislature. Our forces in the war against disease and death are being marshalled and outlined with something like military order and precision. It were an easy task, if time permitted, to cite instance after instance of victorious progress." And for this country—*Let us have a Department of Public Health!*

Longevity of the Typhoid Bacillus.—The present serious increase of typhoid fever in Chicago, as well as its epidemic prevalence elsewhere, gives especial interest to the recently published studies of Prof. Edwin O. Jordan, Ph.D. of the University of Chicago, on the conditions affecting the behavior of the typhoid bacillus in water.[1] Professor Jordan has already indicated in this JOURNAL[2] some of the difficulties that environ the identification of this organism—difficulties which, as he has pointed out, make it imperative to record the source, age and character of the culture used, and in the present elaborate paper he gives additional reasons for vigorous precaution in this particular. Among the other practical points with which the paper abounds, a large number of experiments, conducted with painstaking thoroughness, show conclusively that the bacilli invariably live longest in waters containing the largest amounts of organic nitrogen. It is a noteworthy fact that this holds true even when no appreciable multiplication occurs. This latter interesting circumstance is open to the interpretation either that the lives of individual bacilli are conserved by the presence of organic matter, which acts as a kind of "elixir of life," or that the more hardy bacilli are able to multiply for one or two generations on the slight amount of peptone supplied them, a multiplication that, however, is masked by the mortality occurring among their less resistant companions. For obvious reasons the second explanation seems the more plausible. Briefly stated, the results of the experiments made and recorded by Professor Jordan are as follows:

1. The age of the typhoid stock influences greatly the life of the bacilli introduced into water, a freshly isolated stock possessing distinctly greater vitality than one that has been under cultivation for some months.

2. The typhoid bacillus when introduced with proper precautions into sterilized Lake Michigan water does not multiply but may, under certain conditions, maintain its vitality for upward of ninety-three days.

3. The colon bacillus, on the contrary, under similar conditions undergoes rapid multiplication and may remain alive for upward of 262 days.

4. In redistilled water the typhoid bacillus perishes much more speedily than in the water of the lake.

5. The quantity of organic matter (peptone) in redistilled water influences fundamentally the life of the typhoid bacillus; so small an increment as 0.0126 organic nitrogen (parts per 100,000) causing a perceptible lengthening of life.

6. In sterilized lake water the addition of a still smaller quantity of organic nitrogen—0.0012—affects the longevity of the typhoid bacilli introduced.

Health Reports.—The following health reports have been received by the Supervising Surgeon-General, Marine-Hospital Service:

SMALLPOX—UNITED STATES.

Louisiana: New Orleans, September 14 to 21, 12 cases.
Michigan: Detroit, Battle Creek, Battle Creek Township, Marshall Township, Bedford Township, smallpox reported present September 25.
Pennsylvania: Philadelphia, September 14 to 21, 1 case.
Tennessee: Memphis, September 21 to 28, 3 cases.
West Virginia: Wheeling, September 15 to 28, 1 death.

SMALLPOX—FOREIGN.

Buda-Pesth: September 2 to 9, 1 case.
Dublin: September 7 to 14, 9 cases, 1 death.
London, Eng: September 7 to 14, 42 cases, 2 deaths.
Naples: September 7 to 14, 2 cases, 2 deaths.
Nogales: September 14 to 21, 1 case.
Odessa: August 31 to September 7, 3 cases.
Prague: August 31 to September 7, 1 case.
Rio de Janeiro: August 17 to 31, 121 deaths.
Rotterdam: September 7 to 14, 2 cases, 1 death.
Rouen: August 1 to 31, 40 cases, 6 deaths.
St. Petersburg: August 24 to September 7, 7 cases, 1 death.
Trieste: August 31 to September 7, 1 case.
Warsaw: August 31 to September 7, 1 death.

CHOLERA.

France: Cognac, August 31 to September 6, 1 case, 1 death; Paris, August 18 to 31, 6 cases.[1]
China: Hong Kong, August 10 to 24, 7 deaths.
Japan: Nagasaki, August 23 to 30, 54 cases, 51 deaths; Osaka and Hiogo, August 17 to 31, 346 cases, 264 deaths.
India: Madras, August 17 to 23, 3 deaths.
Austria-Hungary: Galicia, August 28 to September 2, 9 cases, 2 deaths.
Russia: Volhynia, July 7 to 12, 49 cases, 13 deaths; July 21 to 27, 222 cases, 72 deaths; July 28 to August 3, 406 cases, 166 deaths; August 4 to 10, 1,004 cases, 322 deaths; August 10 to 17, 2,025 cases, 718 deaths; Warsaw, August 26, 1 case; Ostrog, Kremenetz, Sarpaw, Starokoustantinow, Nowogrodwalynski, Dubno, cholera reported present August 11 to 17.
Turkey: Hudavendkjar (vilayet), August 18 to 25, 82 cases, 56 deaths; Konia (vilayet), July 25 to August 25, 5 cases, 4 deaths; Adana (vilayet), August 12 to 24, 34 cases, 17 deaths; Aleppo (vilayet), August 6 to 20, 191 cases, 98 deaths; Diabekir (vilayet), August 12 to 24, 184 cases, 223 deaths; Broussa, August 26 to 19, 47 cases, 19 deaths.

YELLOW FEVER.

Cuba: Havana, September 12 to 19, 120 cases,[2] 39 deaths; Sagua la Grande, September 7 to 14, 1 case.
Brazil: Rio de Janeiro, August 17 to 31, 12 deaths.
Mexico: Vera Cruz, September, 12 to 19, 5 deaths.

NECROLOGY.

HENRI ADOLF BARDELEBEN, M.D., of Berlin, Germany, aged 77 years. He was born in Frankfort-on-Oder, and studied medicine in Berlin, Heidelberg and Paris. He became professor in the University at Giessen in 1848, subsequently leaving to take the chair of surgery in the University of Griefswald. In 1868 he became a director of surgical clinics in the Royal Hospital of Charity at Berlin. He was chief of the medical and surgical staffs in the wars of 1866 and 1870, and was associated with Professors Virchow and Muller in several medical works.——J. W. McAlister, M.D. of Albany, Miss., September 17.——E. W. Burnette, M.D., of New York, September 20, aged 52.——H. N. Hollifield, M.D., of Sandersville, Ga., September 23, aged 63.——Charles Bain, M.D., of Murphysboro, Ill., September 27, aged 70.

MISCELLANY.

The American Public Health Association, have elected Dr. Eduardo Liceaga, of Mexico, Mex., President of the Association for the ensuing year. The next meeting will be held in Buffalo, N.Y.

The Long Island College Hospital.—According to the *Brooklyn Medical Journal* for September, this institution has received a handsome gift from the widow of a recently deceased regent, Mr. Henry D. Polhemus. That gentleman, during his lifetime, had been a frequent contributor to the support of the school. He, with others, had more than once come to the front and saved the school from extinction. His widow now purposes to construct a memorial which will bear in perpetuity her late husband's name, and which will facilitate the training of students in an institution with which he was closely identified for so many years. The building which Mrs. Polhemus will erect, and when completed will present to the Long Island College Hospital, will be both a dispen-

[1] The Medical News, Sept. 28, 1895.
[2] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 22, 1894.

[1] Cholera deaths.
[2] Largest mortality from yellow fever in Havana since 1884.

sary and a medical college combined. It will be situated directly opposite the present college structure. The plans are now being prepared by the architect, and it is expected that it will be ready for occupancy in September, 1896, at the time of the opening of the college, and happily coincident with the beginning of the graded system of instruction which the college has adopted. The estimated cost of the property and building is $250,000, and it is the purpose of Mrs. Polhemus to endow the memorial for its permanent maintenance with an additional sum of $250,000.

New Anatomy Law in Wisconsin.—Section 1437, of chapter 58, of the annotated statutes of Wisconsin, was amended by the last Legislature so that every public officer having charge of the body of any deceased person, required to be buried at the public expense, not merely "may," but "shall without charge," deliver such body to that member or agent of the State or any county medical society, or of any legally organized medical college who shall first present to him an order therefor, signed by the president or secretary thereof, "stating" that such body will be used only for the promotion of anatomic science within the State, and that the remains shall be afterward decently buried without public charge. But, as heretofore, no body of any person who in his last sickness requests to be buried, or of any stranger or traveler who shall have suddenly died, shall be so disposed of. And no person so having charge of any such body, it is added, shall sell or deliver the same to any one to be used for scientific or any other purposes outside of the State of Wisconsin. Any officer or other person violating any of the provisions of this act shall be liable to the person, society or corporation aggrieved in the sum of $50 damages, to be recovered in an action therefor.

The Red Cross Society of Japan.—The Japanese have grasped the humane principles and practice of the Red Cross with wonderful avidity. Miss Clara Barton, President of the American Red Cross, says: "Japan is one of the strongest Red Cross nations in the treaty since 1886, in some respects the most advanced Red Cross country in the world, with its every right protected, its Emperor and Empress not only at the head officially, but actively at the head of its national society, directing all its hospital and relief work, and challenging the world in its efficacious methods." Its first active service of importance was during the insurrection of 1877, which lasted eight months. It was then known as the "Hakuaisaka," or Society of Benevolence, and the society was not affiliated with the great international movement. When "The Red Cross Society of Japan" was finally formed, the Emperor and Empress granted it an annual subsidy of 5,000 yen (a yen is 99.5 cents) and large money and land gifts for the erection of hospitals. Princess Arisugawa, a royal scion, Princess Komatsu, with several other princesses, and a large number of ladies of distinguished families, meanwhile formed a band of nurses. After that point was reached the development was rapid, and at the present time the total membership in Japan is probably not less than 100,000 souls. Almost every prominent officer is connected with it. Altogether the society has received in gifts from the crown between 200,000 and 300,000 yen for the purpose of increasing its efficiency.

Amblyopia in Recruits.—The seventh annual session of the Ophthalmological Society of the Netherlands was held at The Hague early in June. Dr. Straub presented a report, on a series of examinations of eyes of young men, entitled "Amblyopia in Eyes of Normal Appearance." He stated that "he had examined 350 young men of almost the same age, all of whom had a visual acuity less than that required for military service, without its being possible with the ophthalmoscope to find disturbances in the media or alterations in the deep membranes. On eliminating those whose vision was not less than the average vision proper to their degree of refraction, and hysterical cases and cases of simulation, there remained 171 cases. To be absolutely sure of not figuring on cases in which errors of refraction could play any part, sixty-five of these were excluded. The 106 remaining cases were divided into isometropes and anisometropes. Each group thus obtained was divided according as only one or both eyes were amblyopic, and the latter group was again divided into two parts: those with binocular vision, and those without it. The figures thus obtained seemed to prove that neither anisometropia nor absence of binocular vision can account for the amblyopia. The existence of an amblyopia, in the sense of Schwiegger, must, then, be admitted.

"Goldzieher attributes this amblyopia to traumatisms of the eye at birth. Noumhoff, who has examined the eyes of fifty children who died during delivery, has found hemorrhages of the choroid in half of the cases. It is very probable that congenital amblyopia is caused by very small ruptures of the central portions of the retina, occurring during labor."

An Ancient Fee-Bill.—In a late number of *Le Progrès Medicale* appears the price list charged by the executioners of ancient Paris for their services to the State, in taking life, or cutting off an organ, of convicted culprits. The writer of the article has unfortunately omitted to affix the probable date of the schedule of prices, and he does not inform us when the polite Parisians ceased to deal out the terrible punishments of "those former days." There is one item, "the Gehenna torture," that is very suggestive of heat and suffocation, but the explanatory foot note is not supplied. The executioner seems to have had two different prices for quartering a man.

AN EXECUTIONER'S PRICE LIST.

	Livres.
To boiling a malefactor in oil	48
To quartering him while alive	30
To affording a criminal passage from life to death by the sword	20
To breaking the body on the wheel	10
To fixing his head upon a pole	10
To cutting a man into four pieces	36
To hanging a culprit	20
To enshrouding the corpse	2
To impaling a living man	24
To burning a sorceress alive	28
To flaying a living man	28
To drowning a child murderess in a sack	24
To burying a suicide at cross-roads	20
To applying the torture	4
To applying the thumbscrew	2
To applying the buskins	4
To administering the Gehenna torture	10
To putting a person in the pillory	2
To flogging	4
To branding with a hot iron	10
To cutting off the nose, the ears or the tongue	10

Statement of Facts to be Covered by Medical Certificate of Lunacy.—The Massachusetts Legislature has suggested a form for a medical certificate of lunacy, covering: 1, sex, age, nativity, color, occupation, whether single, married, or widowed. 2, number of previous attacks, when present attack began. [If the patient has ever been an inmate of an institution for the insane, when, where, and for what length of time, and whether discharged, recovered or otherwise.] 3, was present attack gradual or sudden in its onset? 4, what is the bodily condition of the patient? 5, has the patient been physically injured? If so, when and to what extent? 6, is the patient subject to epilepsy? 7, is the patient cleanly in dress and personal habits? 8, is the patient paralytic, violent, dangerous, destructive, excited or depressed, homicidal or suicidal? 9, what is the supposed cause of the patient's insanity? [State both the predisposing and exciting cause.] 10, has the patient insane relatives, and if so state the degree of consanguinity, and whether paternal or maternal? 11, what are the patient's habits as to the use of liquor, tobacco, opium, chloral or other narcotic? Following this statement of facts, the examiner who makes certificate that the patient is insane, and a proper person for care and treatment in an institution for the insane, is required to state the facts on which he has formed his opinion —what the patient said to him; what the patient did in his

presence; the patient's appearance and manner; other facts indicating insanity, including those communicated by others, and what, if any, change there has been in the patient's mental condition and bodily health.

Soloids for Antiseptic Uses.—Under the above style, a well-known London firm of manufacturing chemists has introduced three or more forms of antiseptic tablets for sanitary, gynecologic and surgical purposes. One form is that of corrosive sublimate, with a sufficient quantity of an alkalin chlorid to prevent decomposition in hard water; one of these soloids dissolved in ten pints yields a solution sufficiently strong to destroy micrococci and bacilli, but this must be increased ten times—one soloid in one pint of water—for the purpose of destroying the spores of microörganisms referred to; and this is the strength usually employed in dealing with exposed surfaces, such as walls and floors of infected rooms, textile fabrics used in connection with patients, to purify the hands of operators in various surgical work, and for the proper cleansing of given skin areas whereon it is intended to make incisions. One of these soloids to a quart of water will suffice to secure an antiseptic solution suitable for sponges, instruments, etc. These soloids are colored in such a way as to make the resultant solution unlike any other liquid usually associated with the operating table or the sick room. A second variety of soloid is that of a combination of the iodids of mercury and potassium. It is claimed that this soloid possesses twice the bactericidal strength of the sublimate salt, does not precipitate albumin, is much less toxic and less liable to cause irritation. Each soloid contains 8.75 of the double salt, so that one dissolved in a pint of water gives a solution of 1 to 1,000 for use in the treatment of newly exposed surfaces in surgical operations, and to insure the perfect asepsis of the hands and instruments. A third preparation is called the "Local Government Board" soloid, because it is made up in such a manner that two of these soloids will afford a solution of the strength and character recommended by the Local Government Board Memorandum of 1892. These L. G. B. soloids are highly convenient, and rapidly soluble in ordinary well water, and their peculiar but perfectly harmless coloration and terebinthine odor are safeguards against poisoning by accident or mistake. White fabrics soaked in the soloid solution are stained a very light blue, but this color is nearly discharged by merely rinsing the fabric in cold water, so that no damage is caused to linen, etc., with which it may come in contact. The prices of these antiseptic tablets, per hundred, vary from 50 cents to $1.45, "on the other side."

Abandonment of Fort Hancock, Texas.—This military post has apparently fulfilled the purpose for which it was established, for, by direction of the Secretary of War, Sept. 6, 1895, it will be discontinued and the public lands on which it is situated will be turned over to the Department of the Interior. This post was established in 1872 as an outpost on the Rio Grande, fifty-two miles southeast of the town of El Paso. At first it was called Camp Rice, and was looked upon as of so temporary a character that no mention was made of it in the Barrack Circular published by the Surgeon-General's office in 1875. At that time Dr. J. J. Hammond gave advice as follows to medical officers who were ordered to duty in the Department of Texas: "The service is essentially frontier service, including garrison duty, escort duty and duty with scouting parties, and medical officers coming here for a tour of duty should provide themselves accordingly. There is little time or opportunity for the enjoyment of luxuries. There is no society outside of the garrison; and this gives an opportunity to officers to avoid living beyond their means. Letter paper, envelopes and pens should be brought along; slat cots with legs to fold up, for bedsteads and lounges, and hair mattresses and pillows are most suitable. Wash stands and ottomans can be extemporized from boxes and barrels. Chairs not glued together, or camp stools are the best as being less costly to transport. Bare floors in summer, and matting or oil cloths in winter, are more healthy and more appropriate than carpets, etc."

All this became changed with the opening of the Southern Pacific Railroad. Fort Hancock became a permanent post built of brick, raised two feet from the surface on stone foundations. Although 2,500 feet above the sea level the site was a flat of sandy loam, covered with chapparal and liable to overflow because only a few feet higher than the banks of the Rio Grande. The barracks was a long, two-storied building, roofed, like all the other buildings at the post, with shingles, and with a wide veranda along its sides. The lower story contained the orderly room, store room, library, kitchen and dining room, baths and tailor's shop; the upper, the dormitories, well lighted and with ridge ventilation. The officers' headquarters were commodious brick cottages. The hospital consisted of one ward of eight beds, with doctor's office, dispensary, steward's room, attendant's room and baths in the main building, and kitchen, dining room and store rooms in a frame addition. The water supply was pumped from a well near the bank of the river into tanks, one of which was used for sedimentation, a second was used as a distributing reservoir, and a third with a higher water level was kept as a reserve in case of fire. There were three-fourth inch pipes for service in all the buildings and nine hydrants at suitable points for the fire service. Waste water was carried into cesspools; excreta disposed of by the dry earth system in galvanized iron boxes, and garbage carted to a dumping ground a mile distant from the post. During the day in summer the temperature ranges from 95 degrees F., to over 100 degrees, but the nights are generally cool and comfortable. The mean temperature of the winter months is about 40 degrees, but sudden changes are then more likely to occur than during the summer months. Fogs are of rare occurrence, but high winds and dust so frequently prevail as to be a cause of nasal and bronchial catarrh. Many cases of malarial fever have been reported from this post, but in most of them the disease was probably contracted when the troops were on scouting duty in other parts of the Department.

Electrolysis in Detachment of the Retina.—The *Annales d' Oculistique* for July contains a report by Dr. Terson, of Toulouse, of twelve cases of the above treatment. The cases were all serious and some of them desperate in their gravity. One of these resulted in a recovery that has lasted nine months; there was improvement in five cases continuing from two to nine months; there were two with negative results and in one case the trouble was aggravated. The report of the successful case is given, in part, below:

"A female 34 years of age, a seamstress, came to the ophthalmologic clinic of the Hôtel-Dieu at Toulouse, on August 6, 1894, stating that eight days before she had lost the sight of her right eye. She had at first noticed a black mass which prevented vision on the nasal side, and then in a few hours the curtain advanced to the middle of the eye, and little by little invaded the entire eye, so that on the next day she could only distinguish light from darkness. It was in this condition that I saw her. She had always been myopic, and had always seen less with the right eye than with the left, of which she did not complain. On inspection, I noticed that the anterior chamber was of abnormal depth, the pupil reflex was very weak, and the iris trembled slightly. The fundus of the eye had a dirty, yellowish appearance, like that seen at the commencement of infection. The tension was manifestly diminished. On ophthalmoscope examination, I found an extensive sac-shaped detachment, which included more than a third of the retina. The disc was scarcely distinguishable, on account of a generalized cloudiness of the vitreous humor. The left eye was myopic 7 dioptres with weak vision.

"Although considering this condition as desperate, I submitted the patient to electrolysis, and applied a current of 5½ milliampères for one minute. No reaction occurred. Forty-eight hours after, I had the patient get up to make an ophthalmosopic examination. The removal of the bandage was a revelation. The vitreous, which had regained its transparency, enabled me to see atrophic disseminated choroidal plaques and a macular lesion. There was no longer a trace of detachment of the retina. The anterior chamber had become more shallow, and the pupil reflex was normal. Wishing to follow the experiment to the end, I did not prescribe any further treatment. On the sixth day there was no trace of detachment. The external appearance of the

eye was the same as that of the healthy eye. Vision was one-tenth, with —12 dioptres, and the visual field normal. The patient left the hospital on the fourteenth day. She had been in bed in all four days. No after treatment was employed. Nine months after the operation, vision was still one-tenth and the visual field had remained normal."

The one untoward result had by Dr. Terson was in a case of very old detachment; the operation was followed in a few hours by an irido-choroiditis that brought about the loss of what remained of vision. So that he has concluded never to apply electrolysis where the detachment has existed for more than two or three months. Dr. Terson closes his paper by formulating the following conclusions:

"1. Positive electrolysis should be applied to recent retinal detachment, and it will have the greater chance of success the sooner it is used after the onset of the accident.

"2. This method of intervention interferes in no way with the use of all the medical methods recommended for lesions of diathesic origin, the value of which has been shown by long experience, from the palliative standpoint.

"3. Clinical observation and experiments on animals prove that the application of a current of 5 milliampères of one minute duration is inoffensive to the eye."

A Symposium of Surgical Writers—The Antiseptic Field—Surgery of the Future.—In a recent issue of the *Independent*, namely that of September 12, appears a series of articles by a dozen or more prominent American surgeons and physicians, among whom are Drs. Arpad G. Gerster, William O. Moore, Samuel E. Milliken, George R. Fowler, Charles A. Powers, Charles Jewett, Frederick Peterson and Samuel Lloyd. The object of the symposium appears to have been to show to the popular mind the progressive attitude of modern surgery; that modern methods are as little like those of the early part of this century—or earlier—"as the railway train is like the old lumbering stage coach." This demonstration is not difficult to be made, but it can be made attractive or unattractive, according to the way in which it is handled. The treatment of the subject, in this instance, has been given into the hands of men of eminent qualification, and will be a welcome summary even and especially to those whose duty it is to teach the art of surgery. Professor Gerster makes a forecast as to the surgery of the coming century. He does not find a promise of so great progress in the near future as has marked the last quarter of a century; but he is nevertheless hopeful of a continuous line of progress, one item of which will be the simplification of antiseptic methods. On this point, and especially that important aspect that concerns military and rural surgery, he writes in the following vein:

"Although the principles governing wound treatment can safely be declared to be firmly established, yet the fact remains unchallenged, that a simplification of the aseptic and antiseptic apparatus is much needed, especially in its application to country practice, and still more so to the needs of the battlefield. With the stupendous increase of the numbers of the modern soldier, whose weapons far exceed in destructiveness anything hitherto seen, the number of the wounded must be enormous even after a short engagement of two large armies. A comparison will best illustrate the facts. Where formerly, with slow fire, limited carrying power of firearms and occasional hand-to-hand encounters, the number of wounded brought to the stations where they received the first surgical aid was comparable to a swollen torrent, yet confined to its bed, now the inrush of the wounded will become an inundation, taxing the energies of an increased, doubled or quadrupled corps of field surgeons to the limits of utmost human endurance, to be followed by pauses where a large proportion of the surgical *personnel* will be more or less idle. The increase of the carrying capacity of the modern small arm would either necessitate the withdrawal of these field-lazareths (*Verbandplätze*) to a safe distance, say of from two to three thousand yards from the line of action—apparently an impracticable matter—or, where the topographical conditions do not offer any protection, the work of the surgeon will have to be performed under the same risks to all concerned, as that of the combatants. Many of the field surgeons of the future century will shed their blood on the battlefield, and simple fairness and justice will compel all governments to accord to the military surgeon the insignia and prerogatives of a combatant.

"To be able to forecast even in a very general way the trend of surgical progress in the near future, is very difficult; in fact, impossible. Yet it is safe to say that the nature of human genius will have the tendency to attack by preference problems as yet unsolved or imperfectly understood."

Craig Colony for Epileptics.—Dr. Frederick Peterson has prepared the following answer to correspondents in regard to the Craig colony:

The object of a colony for epileptics is to provide for the four great needs of these unfortunates: 1, to give them schools where they may be educated as other children and young people are; 2, to afford them industrial training in any sort of occupation they may desire to follow; 2, to provide those epileptics a home to whom all other doors are closed; 4, to treat every case of epilepsy according to the best known scientific methods.

Epilepsy is a peculiar disease, characterized by loss of consciousness and a convulsion. The fit or epileptic seizure occurs from time to time, and may last from a few seconds to a few minutes, sometimes longer. Some patients have fits every day or oftener, some once a week, some once a month, some only once or twice a year. It is only during the fits that they are incapacitated. At other times they are well and strong and healthy looking, and quite as able to work and study as are other people. But the fact that they have these fits, no matter how rarely, debars them from many of the privileges enjoyed by their more fortunate brethren. They will not on that account be received into the public schools, and can receive no education. They can not attend church or social gatherings. They are shunned by their playmates, and they become burdensome to their families. When they grow to adult life no one wishes to employ them, so, although they are able to learn a trade or profession, the shops and colleges are closed against them. No general hospital receives them as patients, and, in fact, there is no place at all which is open to them except an almshouse or an insane asylum, and as the insane asylum is better than the almshouse, many patients are sent there in preference to a poorhouse. There are 120,000 epileptics in the United States. There are some twelve thousand in the State of New York, of whom more than one thousand are in almshouses and asylums on public charge.

Craig Colony, named for the late Oscar Craig, of Rochester, formerly President of the State Board of Charities, consists of nearly one thousand nine hundred acres of land in the Genesee Valley. It is reached by two trunk lines of railways (the Erie and the Delaware & Lackawanna) and from roads centering at Rochester by the Western New York & Pennsylvania Railroad. The colony has its own postoffice and railway station known as Sonyea, an Indian word signifying sunny place. The land is extremely fertile and beautifully diversified with fields, woodlands, meadows and glens. The farms, gardens and orchards are already in a high state of cultivation, and will yield this year an income of $12,000 to $15,000.

The law establishing the colony required that it should be arranged on the village plan. To this end the services of Frederick Law Olmsted, the landscape architect, were secured by the Board of Managers, and he has prepared the scheme of an industrial and agricultural village upon the best principles. There are already many buildings upon the grounds (some thirty or forty) which are to be immediately utilized. Craig Colony will not resemble an institution in any particular, but will look more like a country town than anything else. As the patients are received, they will be set to work or at study in various ways. They will take care of the farms, gardens and orchards; and they will plan and build new houses. There will be among them tailors, shoemakers, printers, bookbinders, masons, ironworkers, carpenters, painters and so on. In fact, every sort of employment, every sort of recreation, everything in short that goes to make up the life of a country villege, will be found in this colony, the only difference being that the citizens of this community will be epileptics.

The resources of the land are such that almost everything in the way of food for the inhabitants of this unique village can be raised by themselves, and their surplus agricultural and manufacturing products judiciously managed can make the colony practically self-supporting. Thus the 1,000 patients already upon public support in this State are to be no longer a burden to the taxpayers.

Work has been progressing very rapidly during the year to prepare existing buildings for the reception of patients. The first quota of patients, numbering sixty, will be taken from the almshouses early in November. We propose to receive 200 during the winter and perhaps more. Estimating the capacity of the present buildings at 300, we shall need additional buildings during the coming year to accommodate 300 more patients, before the 600 now in the almshouses can be cared for.

The patients taken from the almshouses and asylums will be known as State patients, and they will be provided for before any private patients can be received. They will be sent to the colony by the poor authorities of each county according to a form required by law, the blanks for which will be furnished on application to the State Board of Charities or the superintendent of the colony.

As soon as all epileptics now upon public charge, eligible for admission to the colony are provided for, private patients will be received at prices to be regulated by the board of managers, according to the kind and extent of care and attention required. Such patients may, if it be desired, erect cottages for their own use upon the grounds, upon application to the board of managers.

There will be no restriction as to the age of patients admitted, and the only restriction practically applies to the mental condition. Insane epileptics, or epileptics subject to insane outbreaks, can not be taken into the colony.

The law permits the board of managers to take and hold in trust for the State any grant of land, gift or bequest of money, or any donation to be applied, principal or income, or both, to the maintenance and education of epileptics and the general uses of the colony. Charitably disposed people have here an opportunity for the beneficent use of money, and it is hoped that memorial buildings in the way of chapel, library, museum, gymnasium, school, shop, or cottage houses, bearing the donors' name, may in time be erected.

The State Board of Charities has jurisdiction over this colony. The board of managers consists of Dr. Frederick Peterson, President, 60 West Fiftieth Street, New York; Mrs. Charles F. Wadsworth, Geneseo, N. Y.; H. E. Brown, Mount Morris, N. Y., Secretary; W. H. Cuddeback, Buffalo, N. Y.; Dr. Charles E. Jones, Albany, N. Y.; L. L. Oatman, Buffalo, N. Y.; Judge O. P. Hurd, Watkins, N. Y.; Jeanette B. Hawkins, Malone, N. Y., and H. A. Phillips, Lowville, N. Y. The Medical Superintendent is Dr. William P. Spratling, Craig Colony, Sonyea, N. Y.

Society Notes.

American Academy of Railway Surgeons.—At their annual meeting, the Academy of Railway Surgeons elected the following officers: President, Dr. John E. Owens, Chicago; First Vice-President, Dr. L. E. Lemen, Denver, Colo; Second Vice-President, Dr. F. H. Peck, Clinton, N. Y.; Secretary, Dr. Webb J. Kelly, Galion, Ohio; Treasurer, C. B. Kibler, Corry, Pa.; Editor, Dr. R. Harvey Reed, Columbus, Ohio Place of meeting, Chicago, September, 1896. The papers read at the meeting will appear in full in this Journal.

Philadelphia Notes.

The Frederick Douglass Memorial Hospital and Training School for Nurses, designed exclusively for colored patients, has just been opened on Lombard Street above Fifteenth, in a neighborhood most populated by colored residents. It is a new three-story brick structure, with a capacity of from forty to fifty beds. An out-patient department and dispensary is located on the lowest floor. Dr. N. F. Mossell, the chief of the medical staff, was graduated in 1879 by Lincoln University, and in 1882 by the University of Pennsylvania, and is said to be the first colored alumnus of the Medical Department. The following is the staff of the hospital: Consultants: Physicians, James Tyson, Roland G. Curtin; Surgeons, John B. Deaver, Thomas G. Morton; Gynecologists, B. F. Baer, Hannah T. Croasdale. Attending Physicians: E. Clarence Howard, Wm. H. Warrick; Surgeons, Henry B. Wharton, N. F. Mossell; Gynecologists, Caroline V. Anderson, George R. Hilton; Children's Diseases, James T. Potter, D. W. Ogden; Ophthalmologists, H. F. Hansell, A. A. Stevens; Dental Surgeon, William A. Jackson; Pharmacist, Henry M. Minton; Resident Physician, D. W. Postles. The training school for nurses is under the direction of Miss Minnie M. Clemens, who is also matron and head nurse. She is said to be the only woman of the African race who has graduated from the Training School for Nurses of the Hospital of the University of Pennsylvania.

Philadelphia County Medical Society.—At the meeting held September 11, Dr. E. Rosenthal read a paper on "The Treatment of Diphtheria with Diphtheria-Antitoxic Serum." He gave very favorable statistics and stated that although he had lost two cases after Behring's serum, in every case in which he had used the serum made in this country, his patient had recovered. While the necessity for intubation or tracheotomy is not obviated, or reduced, yet the duration of treatment is lessened, which is an important point when the patient lives at a distance and has to be frequently visited. In the discussion, the view was maintained that the antitoxic serum does not do away with the usual measures for disinfecting the throat and treating the general symptoms; but a protest was entered against too frequent local applications, twice a day being considered sufficient, more being useless and often harmful. Dr. Julius Salinger reported a case of diabetic gangrene, in which marked improvement ensued upon the administration of oxygen by inhalation up to one hundred and fifty gallons daily. The case continued for sixteen weeks and was recovering apparently, a line of demarkation having formed and the urine containing much less sugar and albumin, when the patient accidentally injured himself by a fall out of bed and then sank and died of shock and coma. Boulimia was a marked feature of the case after the inhalations had been begun, and was accompanied by distinct improvement in general nutrition.

St. Louis Notes.

Health of the City.—The weekly mortality report for the week ending September 28 gives 182 deaths, 3 less than the preceding week, and 17 more than for the corresponding week of 1894. The death rate for the week is 17 per 1,000. There were 46 deaths due to zymotic diseases. But 1 death was the result of typhoid, while 21 were ascribed to diphtheria, and 4 to croup. Diphtheria is becoming alarmingly prevalent. From June 1 to September 21, 548 cases of diphtheria have been reported, with 142 deaths. The opening of the public schools brought an immediate increase in the number of cases, so that during September, almost as many cases of diphtheria have been reported as during the entire summer in previous years. The Health Commissioner attributes the spread of the disease to laxity on the part of physicians in reporting cases. For this there is now no valid excuse, nor for delay on account of uncertainty in diagnosis. The Health Department offers every facility for making the diagnosis certain, by the free bacteriologic examination of every suspected case. The efforts of the Health Commissioner to check the spread of the disease are most commendable, and he should have the zealous support of every practitioner in the city.

Diphtheria Antitoxin.—The Health Department is making progress in its efforts to produce this remedy.

St. Louis Medical Society.—The first winter meeting of this Society occurred on September 28, with a rather meager attendance.

The State Board of Health and Medical Education.—This year the board has insisted upon the following rules governing the matriculation of medical students: (*a*), creditable certificates of good moral character; (*b*), diplomas of graduation from a good literary and scientific college or high school, or a first-grade teacher's certificate.

In addition, the following resolutions of the board are operative:

Resolved, That a college in good standing with this board shall be one in which the course of instruction is a graded one.

Resolved, That the Secretary of this board be and is hereby instructed to request of the medical colleges of this State proof that they are complying with this resolution. The proofs shall consist of a sworn statement of the dean or

president and the secretary of each school, which shall embrace certain questions specifically set forth.

The rules of the board are specifically directed against any medical school that holds preliminary examinations for its incoming students, and its strict application of them will exclude the graduates of nearly all medical schools from practice in Missouri, save after an examination approved by the board. Granting that the board is actuated by a praiseworthy desire to elevate the standard of medical education and practice, it would seem that these efforts to obtain that end were at least ill-considered. In the first place, there is no uniformity in the attainments of those who may possess high school diplomas; in the second place, no difference is made between the high school diploma and the diploma from a college. In all reason, a certificate of entrance to a college should be equivalent to a high school diploma. In the third place, the exaction of a teacher's first-grade certificate is evidently the result of ignorance of the common requirements for such a certificate. For in many States the applicant for such a certificate must give evidence of having been a teacher for three years. The better colleges of the city are in full sympathy with the board in their effort to raise the standard of medical education, but the faculties will doubtless oppose the continuance of rules which will ultimately give them only local students. This year the regulations of the board have injured only the weaker colleges of the city and State.

THE MARION-SIMS COLLEGE OF MEDICINE opened on the 24th ult. with a class of 325.

HOSPITAL ABUSES.—During the week, investigation has shown that there have been gross abuses at the Female Hospital during the past year. The exhuming of several coffins shows that an unlawful traffic in bodies was carried on at the hospital.

Washington Notes.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended September 21, is as follows: number of deaths white, 52; colored, 61; total, 113. Death rate per 1,000 per annum, white, 14.41; colored, 36.08; total, 21.32. Death rate per 1,000 per annum for corresponding week last year, 20.76. There was a decrease in the death rate last week. The deaths reported to the Health Department numbered 113 as against 122 in the week before. The annual rate fell from 23.02 to 21.32. As compared with the last report the mortality from diarrheal diseases declined from twenty-one to twelve, that of infants under 5 years old from forty-nine to thirty-eight, and that from typhoid fever from twenty-one to thirteen. The investigation into the cause or causes of the prevalence of this latter malady in the District, as referred to in last week's report, is still in progress, with a view to the adoption of such remedial measures as possible. Aside from this disease the city is comparatively healthy, being quite free from contagious affections and malarial troubles, with a continuously decreasing mortality from summer complaints.

MEDICAL DEPARTMENT OF GEORGETOWN UNIVERSITY.—The opening exercises of the Georgetown Medical School took place on September 30. Surgeon-General George M. Sternberg, U. S. A., delivered the inaugural address.

MEDICAL DEPARTMENT OF THE COLUMBIAN UNIVERSITY.—The opening exercises of the Columbian Medical School took place on October 1. The address was delivered by Dr. W. W. Johnston.

MEDICAL ASSOCIATION OF THE DISTRICT OF COLUMBIA.—The regular meeting of the Association was held on October 1. The election of new members was the principal business.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.—The regular weekly meeting of the society was held October 2. Dr. Wm. P. Carr delivered an essay on "The Nature and Treatment of Tumors of the Breasts."

WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.—The annual meeting of the society took place October 4. The President, Dr. H. D. Fry, delivered the Presidential Address. The annual banquet will take place on October 18.

DR. S. C. BUSEY has almost entirely recovered from his late accident.

THE EASTERN DISPENSARY.—A committee representing the dispensary called upon the Commissioners during the week, for the purpose of getting the latter to include in their estimates to Congress an item of $10,000 for the purchase of the building and ground occupied by the dispensary on Delaware Avenue.

GARBAGE DISPOSAL.—The crematories for the disposal of garbage will, in all probability, be completed on or about January 1. The contractors for the work have agreed to build the plant and submit it to test for three months without cost to the District. If they are satisfactory they will be accepted; if not, they are to be removed at the expense of the contractors.

THE COLUMBIAN UNIVERSITY'S NEW PRESIDENT.—The new President of the Columbian University, Dr. B. L. Whitman, has arrived and formally entered upon his new duties. The President is particularly interested in the Medical Department, and his connection with the school will in itself greatly increase the number of students.

THE PUBLIC SERVICES.

The Retirement of Medical Director Gihon.

MEDICAL DIRECTOR ALBERT LEARY GIHON, U. S. Navy, was retired September 28. He was born in Pennsylvania in 1833, and the naval record of this officer is unsurpassed by any member of his corps. His phenomenal public services entitle him to public recognition, and his long and faithful service in our ASSOCIATION has endeared him to its members. The members will be pleased to know that DOCTOR GIHON will be even more active as a medical writer, now that he is free from official care, and the readers of the JOURNAL are promised occasional articles from his forceful pen. Few write with more elegance and none from broader sources of information.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from September 21, 1895, to September 27, 1895.

Major Joseph B. Girard, Surgeon (Presidio of San Francisco, Cal.), is granted leave of absence for one month, to take effect about the 5th proximo.

Major James C. Worthington, Surgeon, is granted leave of absence for three months, on surgeon's certificate of disability.

A board of medical officers, to consist of: Col. Charles H. Alden, Asst. Surgeon-General; Lieut.-Col. William H. Forwood, Deputy Surgeon-General; Lieut.-Col. David L. Huntington, Deputy Surgeon-General; Major Charles Smart, Surgeon; Major Walter Reed, Surgeon, is constituted to meet at the Army Medical Museum Building in Washington, D. C., on Tuesday, Oct. 1, 1895, at 10 o'clock A.M., for the examination of candidates for admission to the Medical Corps of the Army.

Major Henry Lippincott, Surgeon, is relieved from duty at Ft. Adams, R. I., and ordered to Ft. Sheridan, Ill., for duty, relieving Major Alfred C. Girard, Surgeon. Major Girard, on being thus relieved, is ordered to Ft. Douglas, Utah, for duty, relieving Major Charles L. Heizmann, Surgeon. Major Heizmann, on being thus relieved, is ordered to Ft. Adams, R. I., for duty.

Capt. Richard W. Johnson, Asst. Surgeon, will be relieved from duty at Ft. Huachuca, Ariz., upon the arrival there of Capt. William J. Wakeman, Asst. Surgeon, and ordered to Ft. Logan, Colo., for duty.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending September 28, 1895.

Surgeon D. Dickinson, detached from the "Minneapolis," and ordered to examination for promotion.

Surgeon D. N. Bertolette, detached from the "Atlanta," to duty on the "Minneapolis."

LETTERS RECEIVED.

Anderson, Willis S., Detroit, Mich.; Allport, Frank, Minneapolis, Minn.; Ashmead, A. S., New York, N. Y.; Adams, D. S., Manchester, N. H.; American Chemical Co., St. Louis, Mo.

Babcock, Sadie, Osage, Iowa; Battle & Co., St. Louis, Mo.; Bishop, D. D., Chicago, Ill.

Cochran, Jerome, Montgomery, Ala.; Castle, Wilmot & Co., Rochester, N. Y.; Cliff, Frederic, St. George, Utah; Clarke, A. P., Boston, Mass.; Cantrell, G. M. D., Little Rock, Ark.; Colburn, I. M., Richland Center, Wis.

Dewey, W. F., Petersburg, Va.

Freudenthal, W., New York, N. Y.; Field, A. G., Des Moines, Iowa.

Gallaher, T. J., Denver, Colo.; Graham, A. J. & Co., New York, N. Y.; Gillette, W. J., Toledo, Ohio.

Hummel, A. L. (2), New York, N. Y.; Henry Pharmacal Co., Louisville, Ky.

Ingals, E. T., Chicago, Ill.

Johnson, H. L. E., Washington, D. C.

Kempker, J. F., Keokuk, Iowa; Keiper, G. F., Lafayette, Ind.; Kellogg, J. H., Battle Creek, Mich.; Koplik, Henry, New York, N. Y.; Klingensmith, J. F., Blairsville, Pa.

Mayo, W. J., Rochester, Minn.; Marchand, Chas., New York, N. Y.; Martin, J., Davis, So. Dak.; Mann, E. C., New York, N. Y.; McDill, J. R., Milwaukee, Wis.; Madden, Jno., Milwaukee, Wis.

Newman, H. F., Chicago, Ill.; Norbury, F. P., St. Louis, Mo.; New York Post-Graduate Medical School, New York, N. Y.; Newman, H. P., Philadelphia, Pa.; Noyes, W. B. (2), New York, N. Y.

Pettyjohn, E. S., Alma, Mich.; Pollock, R. M., Princeton, Ill.

Ruggles-Gale Co., Columbus, Ohio; Reynolds, F. R., Eau Claire, Wis.; Reyburn, J. A., Elk Horn, Va.

Sanderson, A. J., St. Helena, Cal.; Shepard, C. H., Brooklyn, N. Y.; Stearns, F. & Co., Detroit, Mich.; Small, E. H., Pittsburg, Pa.; Senn, N., Chicago, Ill.

Ulrich, C. F., Wheeling, W. Va.

Ward, M. R., Pittsburg, Pa.